

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re patent application of  
**David S. Terman**

Serial No.: 09/751/708

Filed: December 28, 2000

For: COMPOSITIONS AND METHODS FOR TREATMENT OF NEOPLASTIC  
DISEASE



Group Art Unit: 1635

Examiner:

STATEMENT IN ACCORDANCE WITH 37 CFR 1.821 (f)

Assistant Commissioner for Patents  
Washington, D.C. 20231  
BOX SEQUENCE

Sir:

I hereby state that the information recorded in computer readable form is  
identical to the written (paper) sequence listing.

Respectfully submitted,

Date

2/26/02

David S. Terman

A handwritten signature in cursive script, appearing to read "David S. Terman".



09751703-030102 # 7

SEQUENCE LISTING <110> Terman, David S <120>  
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Ser Asp Lys Lys Leu Lys Asn Tyr Asp Lys Val Lys Thr Glu Leu Leu  
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225	230	235	240
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gat aat aat cga ttg acc gaa gag aaa aaa gtg ccg atc aat tta tgg Asp Asn Asn Arg Leu Thr Glu Glu Lys Lys Val Pro Ile Asn Leu Trp 140 145 150	723
cta gac ggt aaa caa aat aca gta cct ttg gaa acg gtt aaa acg aat Leu Asp Gly Lys Gln Asn Thr Val Pro Leu Glu Thr Val Lys Thr Asn 155 160 165 170	771
aag aaa aat gta act gtt cag gag ttg gat ctt caa gca aga cgt tat Lys Lys Asn Val Thr Val Gln Glu Leu Asp Leu Gln Ala Arg Arg Tyr 175 180 185	819
tta cag gaa aaa tat aat tta tat aac tct gat gtt ttt gat ggg aag Leu Gln Glu Lys Tyr Asn Leu Tyr Asn Ser Asp Val Phe Asp Gly Lys 190 195 200	867
gtt cag agg gga tta atc gtg ttt cat act tct aca gaa cct tcg gtt Val Gln Arg Gly Leu Ile Val Phe His Thr Ser Thr Glu Pro Ser Val 205 210 215	915
aat tac gat tta ttt ggt gct caa gga cag aat tca aat aca cta tta Asn Tyr Asp Leu Phe Gly Ala Gln Gly Gln Asn Ser Asn Thr Leu Leu 220 225 230	963
aga ata tat aga gat aat aaa acg att aac tct gaa aac atg cat att Arg Ile Tyr Arg Asp Asn Lys Thr Ile Asn Ser Glu Asn Met His Ile 235 240 245 250	1011
gat ata tat tta tat aca agt taaacatggg agttttgaac acgtaattgt Asp Ile Tyr Leu Tyr Thr Ser 255	1062
cagattatta tgaaccgaga ataatctgaa agttttacaag cagtaaaaaa agtatatgtg	1122
ctataatatg ctttgagcaa gttggataga tgggtggctat ctgagtataa ggaggtggg	1182
cctatgggtg cattactgaa atcttttagaa aggagacgcc taatgattac aattagtagc	1242
aatggtgcag ttggttttat tccttattgc attgatagggt ctagtaataca agcttattga	1302

tcgccttatg aaacgggata tattaaatTT atagaaaatg agaatagctt ttggtatgac 720  
 atgatgcctg caccaggaga taaatttgac caatctaaat atttaatgat gtacaatgac 780  
 aataaaatgg ttgattctaa agatgtgaag attgaagttt atcttacgac aaagaaaaag 840  
 tgaggatcca gacatgataa gataccttga tgagtttgga caaacc 886

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<400> 3  
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<210> 4 <211> 24 <212> DNA <213> Unknown <220> <223> Primer

<400> 4  
 gccggatcct cactttttct ttgt 24

<210> 5 <211> 22 <212> DNA <213> Unknown <220> <223> Primer

<400> 5  
 tatgaaagtt ttgtatgatg at 22

<210> 6 <211> 20 <212> DNA <213> Unknown <220> <223> Primer

<400> 6  
 agtgacgagt taggtaatct 20

<210> 7 <211> 1443 <212> DNA <213> Staphylococcus aureus <220>  
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<400> 7  
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aatagagtaa aatgaaatc tttttattat attatagaca agtataaaaa aggtatagta 120

atatatgtat gtataagtaa ataatgataa ttctataatt attgtatata actaataatt 180

acttcgacaa aaataatcta ttatccaaat atttttagata ataaaaagtt tgtatggaat 240

tatgcttttag aggtgagcaa a atg aaa aaa aca gca ttt ata cta ctt tta 291  
 Met Lys Lys Thr Ala Phe Ile Leu Leu Leu  
 1 5 10

ttc att gcc cta acg tgg aca aca agt cca ctt gta aat ggt agc gag 339  
 Phe Ile Ala Leu Thr Trp Thr Thr Ser Pro Leu Val Asn Gly Ser Glu  
 15 20 25

aaa agc gaa gaa ata aat gaa aaa gat ttg cga aaa aag tct gaa ttg 387  
 Lys Ser Glu Glu Ile Asn Glu Lys Asp Leu Arg Lys Lys Ser Glu Leu  
 30 35 40

cag gga gca gct tta ggc aat ctt aaa caa atc tat tat tac aat gaa 435  
 Gln Gly Ala Ala Leu Gly Asn Leu Lys Gln Ile Tyr Tyr Tyr Asn Glu  
 45 50 55

65		70		75		80
Ser Ile Ser Leu Ile Ile Phe Pro Ser Pro Tyr Tyr Ser Pro Ala Phe						
		85		90		95
Thr Lys Gly Glu Lys Val Asp Leu Asn Thr Lys Arg Thr Lys Lys Ser						
		100		105		110
Gln His Thr Ser Glu Gly Thr Tyr Ile His Phe Gln Ile Ser Gly Val						
		115		120		125
Thr Asn Thr Glu Lys Leu Pro Thr Pro Ile Glu Leu Pro Leu Lys Val						
		130		135		140
Lys Val His Gly Lys Asp Ser Pro Leu Lys Tyr Gly Pro Lys Phe Asp						
		145		150		155
Lys Lys Gln Leu Ala Ile Ser Thr Leu Asp Phe Glu Ile Arg His Gln						
		165		170		175
Leu Thr Gln Ile His Gly Leu Tyr Arg Ser Ser Asp Lys Thr Gly Gly						
		180		185		190
Tyr Trp Lys Ile Thr Met Asn Asp Gly Ser Thr Tyr Gln Ser Asp Leu						
		195		200		205
Ser Lys Lys Phe Glu Tyr Asn Thr Glu Lys Pro Pro Ile Asn Ile Asp						
		210		215		220
Glu Ile Lys Thr Ile Glu Ala Glu Ile Asn						
		225		230		

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 <221> CDS <222> (79)..(831) <223>

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taaaatggag gaatatta atg gaa aac aat aaa gaa gta ttg aag aaa atg		111
Met Glu Asn Asn Lys Glu Val Leu Lys Lys Met		
1 5 10		
gta ttt ttt gtt tta atg aaa ttt ctt gga cta aca atc ttg cca aaa		159
Val Phe Phe Val Leu Met Lys Phe Leu Gly Leu Thr Ile Leu Pro Lys		
15 20 25		
ggg att tgt tca aca aga ccc aag ccc agc caa tta caa aga tct aat		207
Gly Ile Cys Ser Thr Arg Pro Lys Pro Ser Gln Leu Gln Arg Ser Asn		
30 35 40		

80	85	90	
agc cct gct ttt aca aaa ggg gaa aaa gtt gac tta aac aca aaa aga			339
Ser Pro Ala Phe Thr Lys Gly Glu Lys Val Asp Leu Asn Thr Lys Arg			
95	100	105	
act aaa aaa agc caa cat act agc gaa gga act tat atc cat ttc caa			387
Thr Lys Lys Ser Gln His Thr Ser Glu Gly Thr Tyr Ile His Phe Gln			
110	115	120	
ata agt ggc gtt aca aat act gaa aaa tta cct act cca ata gaa cta			435
Ile Ser Gly Val Thr Asn Thr Glu Lys Leu Pro Thr Pro Ile Glu Leu			
125	130	135	140
cct tta aaa gtt aag gtt cat ggt aaa gat agc ccc tta aag tat ggg			483
Pro Leu Lys Val Lys Val His Gly Lys Asp Ser Pro Leu Lys Tyr Gly			
	145	150	155
cca aag ttc gat aaa aaa caa tta gct ata tca act tta gac ttt gaa			531
Pro Lys Phe Asp Lys Lys Gln Leu Ala Ile Ser Thr Leu Asp Phe Glu			
	160	165	170
att cgt cat cag cta act caa ata cat gga tta tat cgt tca agc gat			579
Ile Arg His Gln Leu Thr Gln Ile His Gly Leu Tyr Arg Ser Ser Asp			
	175	180	185
aaa acg ggt ggt tat tgg aaa ata aca atg aat gac gga tcc aca tat			627
Lys Thr Gly Gly Tyr Trp Lys Ile Thr Met Asn Asp Gly Ser Thr Tyr			
	190	195	200
caa agt gat tta tct aaa aag ttt gaa tac aat act gaa aaa cca cct			675
Gln Ser Asp Leu Ser Lys Lys Phe Glu Tyr Asn Thr Glu Lys Pro Pro			
205	210	215	220
ata aat att gat gaa ata aaa act ata gaa gca gaa att aat taa			720
Ile Asn Ile Asp Glu Ile Lys Thr Ile Glu Ala Glu Ile Asn			
	225	230	
tttaccactt t			731
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Met Asn Lys Lys Leu Leu Met Asn Phe Phe Ile Val Ser Pro Leu Leu			
1	5	10	15
Leu Ala Thr Thr Ala Thr Asp Phe Thr Pro Val Pro Leu Ser Ser Asn			
	20	25	30
Gln Ile Ile Lys Thr Ala Lys Ala Ser Thr Asn Asp Asn Ile Lys Asp			
	35	40	45
Leu Leu Asp Trp Tyr Ser Ser Gly Ser Asp Thr Phe Thr Asn Ser Glu			
	50	55	60
Val Leu Asp Asn Ser Leu Gly Ser Met Arg Ile Lys Asn Thr Asp Gly			

Ala Cys Met Tyr Gly Gly Val Thr Leu His Asp Asn Asn Arg Leu Thr  
130 135 140

Glu Glu Lys Lys Val Pro Ile Asn Leu Trp Ile Asp Gly Lys Gln Thr  
145 150 155 160

Thr Val Pro Ile Asp Lys Val Lys Thr Ser Lys Lys Glu Val Thr Val  
165 170 175

Gln Glu Leu Asp Leu Gln Ala Arg His Tyr Leu His Gly Lys Phe Gly  
180 185 190

Leu Tyr Asn Ser Asp Ser Phe Gly Gly Lys Val Gln Arg Gly Leu Ile  
195 200 205

Val Phe His Ser Ser Glu Gly Ser Thr Val Ser Tyr Asp Leu Phe Asp  
210 215 220

Ala Gln Gly Gln Tyr Pro Asp Thr Leu Leu Arg Ile Tyr Arg Asp Asn  
225 230 235 240

Lys Thr Ile Asn Ser Glu Asn Leu  
245

<210> 17 <211> 731 <212> DNA <213> Staphylococcus aureus <220>  
<221> CDS <222> (16)..(720) <223>

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Met Asn Lys Lys Leu Leu Met Asn Phe Phe Ile Val  
1 5 10

agc cct ttg ttg ctt gcg aca act gct aca gat ttt acc cct gtt ccc 99  
Ser Pro Leu Leu Leu Ala Thr Thr Ala Thr Asp Phe Thr Pro Val Pro  
15 20 25

tta tca tct aat caa ata atc aaa act gca aaa gca tct aca aac gat 147  
Leu Ser Ser Asn Gln Ile Ile Lys Thr Ala Lys Ala Ser Thr Asn Asp  
30 35 40

aat ata aag gat ttg cta gac tgg tat agt agt ggg tct gac act ttt 195  
Asn Ile Lys Asp Leu Leu Asp Trp Tyr Ser Ser Gly Ser Asp Thr Phe  
45 50 55 60

aca aat agt gaa gtt tta gat aat tcc tta gga tct atg cgt ata aaa 243  
Thr Asn Ser Glu Val Leu Asp Asn Ser Leu Gly Ser Met Arg Ile Lys  
65 70 75

aac aca gat ggc agc atc agc ttg ata att ttt ccg agt cct tat tat 291  
Asn Thr Asp Gly Ser Ile Ser Leu Ile Ile Phe Pro Ser Pro Tyr Tyr

Glu 145	Glu	Lys	Lys	Val	Pro 150	Ile	Asn	Leu	Trp	Ile 155	Asp	Gly	Lys	Gln	Thr 160	
aca	gta	cct	ata	gat	aaa	gtt	aaa	aca	agc	aaa	aaa	gaa	gta	act	gtt	528
Thr	Val	Pro	Ile	Asp 165	Lys	Val	Lys	Thr	Ser 170	Lys	Lys	Glu	Val	Thr 175	Val	
caa	gag	cta	gat	ctt	cag	gca	agg	cat	tat	tta	cac	gga	aaa	ttt	ggt	576
Gln	Glu	Leu	Asp 180	Leu	Gln	Ala	Arg	His 185	Tyr	Leu	His	Gly	Lys 190	Phe	Gly	
tta	tat	aac	tca	gac	agc	ttt	ggc	ggt	aag	gtg	caa	aga	ggc	ttg	att	624
Leu	Tyr	Asn 195	Ser	Asp	Ser	Phe	Gly 200	Gly	Lys	Val	Gln	Arg 205	Gly	Leu	Ile	
gtg	ttt	cat	tct	tct	gaa	ggg	tcc	acg	gta	agt	tat	gat	ttg	ttt	gat	672
Val	Phe 210	His	Ser	Ser	Glu	Gly 215	Ser	Thr	Val	Ser	Tyr 220	Asp	Leu	Phe	Asp	
gct	caa	ggg	caa	tat	cca	gat	aca	tta	tta	aga	att	tac	aga	gat	aat	720
Ala 225	Gln	Gly	Gln	Tyr	Pro 230	Asp	Thr	Leu	Leu	Arg 235	Ile	Tyr	Arg	Asp	Asn 240	
aaa	act	att	aat	tca	gag	aac	ctc	cat	attg	gatt	tgt	attt	tata	caca	acttga	774
Lys	Thr	Ile	Asn 245	Ser	Glu	Asn	Leu									

<210> 16 <211> 248 <212> PRT <213> Staphylococcus aureus <400> 16

Met Lys Lys Thr Ala Phe Ile Leu Leu Leu Phe Ile Ala Leu Thr Leu  
1 5 10 15

Thr Thr Ser Pro Leu Val Asn Gly Ser Glu Lys Ser Glu Glu Ile Asn  
20 25 30

Glu Lys Asp Leu Arg Lys Lys Ser Glu Leu Gln Arg Asn Ala Leu Ser  
35 40 45

Asn Leu Arg Gln Ile Tyr Tyr Tyr Asn Glu Lys Ala Ile Thr Glu Asn  
50 55 60

Lys Glu Ser Asp Asp Gln Phe Leu Glu Asn Thr Leu Leu Phe Lys Gly  
65 70 75 80

Phe Phe Thr Gly His Pro Trp Tyr Asn Asp Leu Leu Val Asp Leu Gly  
85 90 95

Ser Lys Asp Ala Thr Asn Lys Tyr Lys Gly Lys Lys Val Asp Leu Tyr  
100 105 110

Gly Ala Tyr Tyr Gly Tyr Gln Cys Ala Gly Gly Thr Pro Asn Lys Thr  
115 120 125

<210> 20 <211> 250 <212> PRT <213> Streptococcus pyogenes <400> 20

Met Glu Asn Asn Lys Glu Val Leu Lys Lys Met Val Phe Phe Val Leu  
1 5 10 15

Met Lys Phe Leu Gly Leu Thr Ile Leu Pro Lys Gly Ile Cys Ser Thr  
20 25 30

Arg Pro Lys Pro Ser Gln Leu Gln Arg Ser Asn Leu Val Lys Thr Phe  
35 40 45

Lys Ile Tyr Ile Phe Phe Met Arg Val Thr Leu Val Thr His Glu Asn  
50 55 60

Val Lys Ser Val Asp Gln Leu Leu Ser His Asp Leu Ile Tyr Asn Val  
65 70 75 80

Ser Gly Pro Asn Tyr Asp Lys Leu Lys Thr Glu Leu Lys Asn Gln Glu  
85 90 95

Met Ala Thr Leu Phe Lys Asp Lys Asn Val Asp Ile Tyr Gly Val Glu  
100 105 110

Tyr Tyr His Leu Cys Tyr Leu Cys Glu Asn Ala Glu Arg Ser Ala Cys  
115 120 125

Leu Tyr Gly Gly Val Thr Asn His Glu Gly Asn His Leu Glu Ile Pro  
130 135 140

Lys Lys Ile Val Val Lys Val Ser Ile Asp Gly Ile Gln Ser Leu Ser  
145 150 155 160

Phe Asp Ile Glu Gln Ile Lys Asn Gly Asn Cys Ser Arg Ile Ser Tyr  
165 170 175

Thr Val Arg Lys Tyr Leu Thr Asp Asn Lys Gln Leu Tyr Thr Asn Gly  
180 185 190

Pro Ser Lys Tyr Glu Thr Gly Tyr Ile Lys Phe Ile Pro Lys Asn Lys  
195 200 205

Glu Ser Phe Trp Phe Asp Phe Phe Pro Glu Pro Glu Phe Thr Gln Ser  
210 215 220

tta gtt aaa acc ttc aaa ata tat att ttc ttt atg agg gtg acc ctg	255
Leu Val Lys Thr Phe Lys Ile Tyr Ile Phe Phe Met Arg Val Thr Leu	
45 50 55	
gtt act cac gag aat gtg aaa tct gtt gat caa ctt tta tca cac gat	303
Val Thr His Glu Asn Val Lys Ser Val Asp Gln Leu Leu Ser His Asp	
60 65 70 75	
tta ata tat aat gtt tca ggg cca aat tat gat aaa tta aaa act gaa	351
Leu Ile Tyr Asn Val Ser Gly Pro Asn Tyr Asp Lys Leu Lys Thr Glu	
80 85 90	
ctt aag aac caa gag atg gca act tta ttt aag gat aaa aac gtt gat	399
Leu Lys Asn Gln Glu Met Ala Thr Leu Phe Lys Asp Lys Asn Val Asp	
95 100 105	
att tat ggt gta gaa tat tac cat ctc tgt tat tta tgt gaa aat gca	447
Ile Tyr Gly Val Glu Tyr Tyr His Leu Cys Tyr Leu Cys Glu Asn Ala	
110 115 120	
gaa agg agt gca tgt ctc tac gga ggg gta aca aat cat gaa ggg aat	495
Glu Arg Ser Ala Cys Leu Tyr Gly Gly Val Thr Asn His Glu Gly Asn	
125 130 135	
cat tta gaa att cct aaa aag ata gtc gtt aaa gta tca atc gat ggt	543
His Leu Glu Ile Pro Lys Lys Ile Val Val Lys Val Ser Ile Asp Gly	
140 145 150 155	
atc caa agc cta tca ttt gat att gaa caa ata aaa aat ggt aac tgc	591
Ile Gln Ser Leu Ser Phe Asp Ile Glu Gln Ile Lys Asn Gly Asn Cys	
160 165 170	
tca aga att agc tat aca gtt aga aaa tat ctt aca gat aat aag caa	639
Ser Arg Ile Ser Tyr Thr Val Arg Lys Tyr Leu Thr Asp Asn Lys Gln	
175 180 185	
cta tat act aat gga cct tct aaa tat gaa act gga tat ata aag ttc	687
Leu Tyr Thr Asn Gly Pro Ser Lys Tyr Glu Thr Gly Tyr Ile Lys Phe	
190 195 200	
ata cct aag aat aaa gaa agt ttt tgg ttt gat ttt ttc cct gaa cca	735
Ile Pro Lys Asn Lys Glu Ser Phe Trp Phe Asp Phe Phe Pro Glu Pro	
205 210 215	
gaa ttt act caa tct aaa tat ctt atg ata tat aaa gat aat gaa acg	783
Glu Phe Thr Gln Ser Lys Tyr Leu Met Ile Tyr Lys Asp Asn Glu Thr	
220 225 230 235	
ctt gac tca aac aca agc caa att gaa gtc tac cta aca acc aag taa	831
Leu Asp Ser Asn Thr Ser Gln Ile Glu Val Tyr Leu Thr Thr Lys	
240 245 250	
cttttgcttt tggcaacctt acctactgct ggatttagaa attttattgc aattctttta	891
ttaatgtaaa aacgctcatt tgatgagcgg ttttgtctta tctaaaggag ctttacctcc	951
taatgctgca aaattttaaa tgttggattt ttgtatttgt cattgtattt gatgggtaat	1011
cccatTTTTc gacagacatc	1031



Lys Tyr Leu Met Ile Tyr Lys Asp Asn Glu Thr Leu Asp Ser Asn Thr  
225 230 235 240

Ser Gln Ile Glu Val Tyr Leu Thr Thr Lys  
245 250

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<210> 23 <211> 22 <212> DNA <213> Unknown <220> <223> Primer

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gggaattcca tggagaaaag cg 22

<210> 24 <211> 22 <212> DNA <213> Unknown <220> <223> Primer

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gcg gatcctc actttttctt tg 22

<210> 25 <211> 50 <212> DNA <213> Unknown <220> <223> Primer

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<210> 26 <211> 42 <212> DNA <213> Unknown <220> <223> Primer

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ttgccttctg agcaatcggt cactggttcg aatccagtac aacgcgccat atttatattac 120

caggctcgct tttgcgggcc ttttttatat ctgcgccggg tctggtgctg attacttcag 180

cctaaaggaa cacctgtat atg aag tgt ata tta ttt aaa tgg gta ctg tgc 232  
Met Lys Cys Ile Leu Phe Lys Trp Val Leu Cys  
1 5 10

ctg tta ctg ggt ttt tct tcg gta tcc tat tcc cgg gag ttt acg ata 280  
Leu Leu Leu Gly Phe Ser Ser Val Ser Tyr Ser Arg Glu Phe Thr Ile

15										20					25					
gac	ttt	tcg	acc	caa	caa	agt	tat	gtc	tct	tcg	tta	aat	agt	ata	cgg	328				
Asp	Phe	Ser	Thr	Gln	Gln	Ser	Tyr	Val	Ser	Ser	Leu	Asn	Ser	Ile	Arg					
		30					35					40								
aca	gag	ata	tcg	acc	cct	ctt	gaa	cat	ata	tct	cag	ggg	acc	aca	tcg	376				
Thr	Glu	Ile	Ser	Thr	Pro	Leu	Glu	His	Ile	Ser	Gln	Gly	Thr	Thr	Ser					
	45					50					55									
gtg	tct	gtt	att	aac	cac	acc	cca	ccg	ggc	agt	tat	ttt	gct	gtg	gat	424				
Val	Ser	Val	Ile	Asn	His	Thr	Pro	Pro	Gly	Ser	Tyr	Phe	Ala	Val	Asp					
60					65					70					75					
ata	cga	ggg	ctt	gat	gtc	tat	cag	gcg	cgt	ttt	gac	cat	ctt	cgt	ctg	472				
Ile	Arg	Gly	Leu	Asp	Val	Tyr	Gln	Ala	Arg	Phe	Asp	His	Leu	Arg	Leu					
				80					85					90						
att	att	gag	caa	aat	aat	tta	tat	gtg	gcc	ggg	ttc	gtt	aat	acg	gca	520				
Ile	Ile	Glu	Gln	Asn	Asn	Leu	Tyr	Val	Ala	Gly	Phe	Val	Asn	Thr	Ala					
			95					100					105							
aca	aat	act	ttc	tac	cgt	ttt	tca	gat	ttt	aca	cat	ata	tca	gtg	ccc	568				
Thr	Asn	Thr	Phe	Tyr	Arg	Phe	Ser	Asp	Phe	Thr	His	Ile	Ser	Val	Pro					
		110					115					120								
ggt	gtg	aca	acg	gtt	tcc	atg	aca	acg	gac	agc	agt	tat	acc	act	ctg	616				
Gly	Val	Thr	Thr	Val	Ser	Met	Thr	Thr	Asp	Ser	Ser	Tyr	Thr	Thr	Leu					
	125					130						135								
caa	cgt	gtc	gca	gcg	ctg	gaa	cgt	tcc	gga	atg	caa	atc	agt	cgt	cac	664				
Gln	Arg	Val	Ala	Ala	Leu	Glu	Arg	Ser	Gly	Met	Gln	Ile	Ser	Arg	His					
140					145					150					155					
tca	ctg	gtt	tca	tca	tat	ctg	gcg	tta	atg	gag	ttc	agt	ggt	aat	aca	712				
Ser	Leu	Val	Ser	Ser	Tyr	Leu	Ala	Leu	Met	Glu	Phe	Ser	Gly	Asn	Thr					
				160					165					170						
atg	acc	aga	gat	gca	tcc	aga	gca	gtt	ctg	cgt	ttt	gtc	act	gtc	aca	760				
Met	Thr	Arg	Asp	Ala	Ser	Arg	Ala	Val	Leu	Arg	Phe	Val	Thr	Val	Thr					
			175					180					185							
gca	gaa	gcc	tta	cgc	ttc	agg	cag	ata	cag	aga	gaa	ttt	cgt	cag	gca	808				
Ala	Glu	Ala	Leu	Arg	Phe	Arg	Gln	Ile	Gln	Arg	Glu	Phe	Arg	Gln	Ala					
		190					195					200								
ctg	tct	gaa	act	gct	cct	gtg	tat	acg	atg	acg	ccg	gga	gac	gtg	gac	856				
Leu	Ser	Glu	Thr	Ala	Pro	Val	Tyr	Thr	Met	Thr	Pro	Gly	Asp	Val	Asp					
	205					210					215									
ctc	act	ctg	aac	tgg	ggg	cga	atc	agc	aat	gtg	ctt	ccg	gag	tat	cgg	904				
Leu	Thr	Leu	Asn	Trp	Gly	Arg	Ile	Ser	Asn	Val	Leu	Pro	Glu	Tyr	Arg					
220					225					230					235					
gga	gag	gat	ggt	gtc	aga	gtg	ggg	aga	ata	tcc	ttt	aat	aat	ata	tca	952				
Gly	Glu	Asp	Gly	Val	Arg	Val	Gly	Arg	Ile	Ser	Phe	Asn	Asn	Ile	Ser					
				240					245					250						
gcg	ata	ctg	ggg	act	gtg	gcc	gtt	ata	ctg	aat	tgc	cat	cat	cag	ggg	1000				
Ala	Ile	Leu	Gly	Thr	Val	Ala	Val	Ile	Leu	Asn	Cys	His	His	Gln	Gly					

255 260 265

gcg cgt tct gtt cgc gcc gtg aat gaa gag agt caa cca gaa tgt cag 1048  
Ala Arg Ser Val Arg Ala Val Asn Glu Glu Ser Gln Pro Glu Cys Gln  
270 275 280

ata act ggc gac agg cct gtt ata aaa ata aac aat aca tta tgg gaa 1096  
Ile Thr Gly Asp Arg Pro Val Ile Lys Ile Asn Asn Thr Leu Trp Glu  
285 290 295

agt aat aca gct gca gcg ttt ctg aac aga aag tca cag ttt tta tat 1144  
Ser Asn Thr Ala Ala Ala Phe Leu Asn Arg Lys Ser Gln Phe Leu Tyr  
300 305 310 315

aca acg ggt aaa taa aggagttaag catgaagaag atgtttatgg cggttttatt 1199  
Thr Thr Gly Lys

tgcattagct tctgttaatg caatggcggc ggattgtgct aaaggtaaaa ttgagttttc 1259

caagtataat gaggatgaca catttacagt gaaggttgac gggaaagaat actggaccag 1319

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Gln Ser Tyr Val Ser Ser Leu Asn Ser Ile Arg Thr Glu Ile Ser Thr  
35 40 45

Pro Leu Glu His Ile Ser Gln Gly Thr Thr Ser Val Ser Val Ile Asn  
50 55 60

His Thr Pro Pro Gly Ser Tyr Phe Ala Val Asp Ile Arg Gly Leu Asp  
65 70 75 80

Val Tyr Gln Ala Arg Phe Asp His Leu Arg Leu Ile Ile Glu Gln Asn  
85 90 95

Asn Leu Tyr Val Ala Gly Phe Val Asn Thr Ala Thr Asn Thr Phe Tyr

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Tyr Leu Ala Leu Met Glu Phe Ser Gly Asn Thr Met Thr Arg Asp Ala		
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Ser Arg Ala Val Leu Arg Phe Val Thr Val Thr Ala Glu Ala Leu Arg		
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Phe Arg Gln Ile Gln Arg Glu Phe Arg Gln Ala Leu Ser Glu Thr Ala		
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Pro Val Tyr Thr Met Thr Pro Gly Asp Val Asp Leu Thr Leu Asn Trp		
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Gly Arg Ile Ser Asn Val Leu Pro Glu Tyr Arg Gly Glu Asp Gly Val		
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Arg Val Gly Arg Ile Ser Phe Asn Asn Ile Ser Ala Ile Leu Gly Thr		
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Val Ala Val Ile Leu Asn Cys His His Gln Gly Ala Arg Ser Val Arg		
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Ala Val Asn Glu Glu Ser Gln Pro Glu Cys Gln Ile Thr Gly Asp Arg		
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gatattatatt atatgataat agttcatttt gtatttttgt tttttttgat attctcacct 180  
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gatttcaa at gctcgtttgt ggccagttat acctcaaata actcaagttg ttgagcacag 420  
ccaacgcaca tgcagtttga cgtatgacag gtatgcttta tttcatttaa att atg 476  
Met  
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atg gtt ttc cag cca atc agt gag ttt ctc ttg ata agg aat gcg gga 524  
Met Val Phe Gln Pro Ile Ser Glu Phe Leu Leu Ile Arg Asn Ala Gly  
5 10 15

atg tct atg tat ttt aat aaa ata att tca ttt aat att att tca cga 572  
Met Ser Met Tyr Phe Asn Lys Ile Ile Ser Phe Asn Ile Ile Ser Arg  
20 25 30

ata gtt att tgt atc ttt ttg ata tgt gga atg ttc atg gct ggg gct 620  
Ile Val Ile Cys Ile Phe Leu Ile Cys Gly Met Phe Met Ala Gly Ala  
35 40 45

tca gaa aaa tat gat gct aac gca ccg caa cag gtc cag cct tat tct 668  
Ser Glu Lys Tyr Asp Ala Asn Ala Pro Gln Gln Val Gln Pro Tyr Ser  
50 55 60 65

gtc tct tca tct gca ttt gaa aat ctc cat cct aat aat gaa atg gag 716  
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70 75 80

agt tca atc aat ccc ttt tcc gca tcg gat aca gaa aga aat gct gca 764  
Ser Ser Ile Asn Pro Phe Ser Ala Ser Asp Thr Glu Arg Asn Ala Ala  
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ata ata gat cgc gcc aat aag gag cag gag act gaa gcg gtg aat aag 812

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Val Ala His Ser Met Val Gly Asp Ala Val Asn Gln Glu Ile Lys Gln	
130 135 140 145	
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Trp Leu Asn Arg Phe Gly Thr Ala Gln Val Asn Leu Asn Phe Asp Lys	
150 155 160	
aat ttt tcg cta aaa gaa agc tct ctt gat tgg ctg gct cct tgg tat	1004
Asn Phe Ser Leu Lys Glu Ser Ser Leu Asp Trp Leu Ala Pro Trp Tyr	
165 170 175	
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Asp Ser Ala Ser Phe Leu Phe Phe Ser Gln Leu Gly Ile Arg Asn Lys	
180 185 190	
gac agc cgc aac aca ctt aac ctt ggc gtc ggg ata cgt aca ttg gag	1100
Asp Ser Arg Asn Thr Leu Asn Leu Gly Val Gly Ile Arg Thr Leu Glu	
195 200 205	
aac ggt tgg ctg tac gga ctt aat act ttt tat gat aat gat ttg acc	1148
Asn Gly Trp Leu Tyr Gly Leu Asn Thr Phe Tyr Asp Asn Asp Leu Thr	
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Gly His Asn His Arg Ile Gly Leu Gly Ala Glu Ala Trp Thr Asp Tyr	
230 235 240	
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Leu Gln Leu Ala Ala Asn Gly Tyr Phe Arg Leu Asn Gly Trp His Ser	
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Ser Arg Asp Phe Ser Asp Tyr Lys Glu Arg Pro Ala Thr Gly Gly Asp	
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Leu Arg Ala Asn Ala Tyr Leu Pro Ala Leu Pro Gln Leu Gly Gly Lys	
275 280 285	
ttg atg tat gag caa tac acc ggt gag cgt gtt gct tta ttt ggt aaa	1388
Leu Met Tyr Glu Gln Tyr Thr Gly Glu Arg Val Ala Leu Phe Gly Lys	
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Asp Asn Leu Gln Arg Asn Pro Tyr Ala Val Thr Ala Gly Ile Asn Tyr	
310 315 320	
acc ccc gtg cct cta ctc act gtc ggg gta gat cag cgt atg ggg aaa	1484
Thr Pro Val Pro Leu Leu Thr Val Gly Val Asp Gln Arg Met Gly Lys	
325 330 335	
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Ser	Ser	Lys	His	Glu	Thr	Gln	Trp	Asn	Leu	Gln	Met	Asn	Tyr	Arg	Leu		
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Gly	Glu	Ser	Phe	Gln	Ser	Gln	Leu	Ser	Pro	Ser	Ala	Val	Ala	Gly	Thr		
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cgt	cta	ctg	gcg	gag	agc	cgc	tat	aac	ctt	gtc	gat	cgt	aac	aat	aat	1628	
Arg	Leu	Leu	Ala	Glu	Ser	Arg	Tyr	Asn	Leu	Val	Asp	Arg	Asn	Asn	Asn		
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atc	gtg	ttg	gag	tat	cag	aaa	cag	cag	gtg	gtt	aaa	ctg	aca	tta	tcg	1676	
Ile	Val	Leu	Glu	Tyr	Gln	Lys	Gln	Gln	Val	Val	Lys	Leu	Thr	Leu	Ser		
			390						395					400			
cca	gca	act	atc	tcc	ggc	ctg	ccg	ggt	cag	gtt	tat	cag	gtg	aac	gca	1724	
Pro	Ala	Thr	Ile	Ser	Gly	Leu	Pro	Gly	Gln	Val	Tyr	Gln	Val	Asn	Ala		
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Gln	Val	Gln	Gly	Ala	Ser	Ala	Val	Arg	Glu	Ile	Val	Trp	Ser	Asp	Ala		
	420						425					430					
gaa	ctg	att	gcc	gct	ggc	ggc	aca	tta	aca	cca	ctg	agt	acc	aca	caa	1820	
Glu	Leu	Ile	Ala	Ala	Gly	Gly	Thr	Leu	Thr	Pro	Leu	Ser	Thr	Thr	Gln		
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Phe	Asn	Leu	Val	Leu	Pro	Pro	Tyr	Lys	Arg	Thr	Ala	Gln	Val	Ser	Arg		
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Val	Thr	Asp	Asp	Leu	Thr	Ala	Asn	Phe	Tyr	Ser	Leu	Ser	Ala	Leu	Ala		
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Val	Asp	His	Gln	Gly	Asn	Arg	Ser	Asn	Ser	Phe	Thr	Leu	Ser	Val	Thr		
			485					490					495				
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Val	Gln	Gln	Pro	Gln	Leu	Thr	Leu	Thr	Ala	Ala	Val	Ile	Gly	Asp	Gly		
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gca	ccg	gct	aat	ggg	aaa	act	gca	atc	acc	gtt	gag	ttc	acc	gtt	gct	2060	
Ala	Pro	Ala	Asn	Gly	Lys	Thr	Ala	Ile	Thr	Val	Glu	Phe	Thr	Val	Ala		
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Asp	Phe	Glu	Gly	Lys	Pro	Leu	Ala	Gly	Gln	Glu	Val	Val	Ile	Thr	Thr		
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				550					555					560			
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Val	Thr	Ala	Glu	Val	Glu	Gly	Gln	Arg	Gln	Ser	Val	Asp	Thr	His	Phe		
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Leu	Lys	Asp	Thr	Tyr	Gly	Asp	Pro	Gln	Ala	Gly	Ala	Asn	Val	Ala	Phe		
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gac	aca	acc	tta	ggc	aat	atg	ggc	gtt	atc	acg	gat	cac	aat	gac	ggc	2444	
Asp	Thr	Thr	Leu	Gly	Asn	Met	Gly	Val	Ile	Thr	Asp	His	Asn	Asp	Gly		
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Thr	Tyr	Ser	Ala	Pro	Leu	Thr	Ser	Thr	Thr	Leu	Gly	Val	Ala	Thr	Val		
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Thr	Val	Lys	Val	Asp	Gly	Ala	Ala	Phe	Ser	Val	Pro	Ser	Val	Thr	Val		
	675					680					685						
aat	ttc	acg	gca	gat	cct	att	cca	gat	gct	ggc	cgc	tcc	agt	ttc	acc	2588	
Asn	Phe	Thr	Ala	Asp	Pro	Ile	Pro	Asp	Ala	Gly	Arg	Ser	Ser	Phe	Thr		
690					695					700					705		
gtc	tcc	aca	ccg	gat	atc	ttg	gct	gat	ggc	acg	atg	agt	tcc	aca	tta	2636	
Val	Ser	Thr	Pro	Asp	Ile	Leu	Ala	Asp	Gly	Thr	Met	Ser	Ser	Thr	Leu		
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Ser	Phe	Val	Pro	Val	Asp	Lys	Asn	Gly	His	Phe	Ile	Ser	Gly	Met	Gln		
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Thr	Glu	Gln	Pro	Asp	Ser	Tyr	Thr	Ala	Thr	Val	Val	Gly	Asn	Ser	Val		
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Gly	Asp	Val	Thr	Ile	Thr	Pro	Gln	Val	Asp	Thr	Leu	Ile	Leu	Ser	Thr		
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Leu	Gln	Lys	Lys	Ile	Ser	Leu	Phe	Pro	Val	Pro	Thr	Leu	Thr	Gly	Ile		
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Leu	Val	Asn	Gly	Gln	Asn	Phe	Ala	Thr	Asp	Lys	Gly	Phe	Pro	Lys	Thr		
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Asn Asn Thr Gln Tyr Glu Trp Ser Ser Ser Phe Thr Pro Asn Val Ser	
835 840 845	
gtt aac gat cag ggt cag gtg acg att acc tac caa acc tat agc gaa	3068
Val Asn Asp Gln Gly Gln Val Thr Ile Thr Tyr Gln Thr Tyr Ser Glu	
850 855 860 865	
gtg gct gtg acg gcg aaa agt aaa aaa ttc cca agt tat tcg gtg agt	3116
Val Ala Val Thr Ala Lys Ser Lys Lys Phe Pro Ser Tyr Ser Val Ser	
870 875 880	
tat cgg ttc tac cca aat cgg tgg ata tac gat ggc ggc aga tcg ctg	3164
Tyr Arg Phe Tyr Pro Asn Arg Trp Ile Tyr Asp Gly Gly Arg Ser Leu	
885 890 895	
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Val Ser Ser Leu Glu Ala Ser Arg Gln Cys Gln Gly Ser Asp Met Ser	
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Ala Val Leu Glu Ser Ser Arg Ala Thr Asn Gly Thr Arg Ala Pro Asp	
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Gly Thr Leu Trp Gly Glu Trp Gly Ser Leu Thr Ala Tyr Ser Ser Asp	
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Trp Gln Ser Gly Glu Tyr Trp Val Lys Lys Thr Ser Thr Asp Phe Glu	
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Thr Met Asn Met Asp Thr Gly Ala Leu Gln Pro Gly Pro Ala Tyr Leu	
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Ala Phe Pro Leu Cys Ala Leu Ser Ile	
980 985	
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Arg Ile Val Ile Cys Ile Phe Leu Ile Cys Gly Met Phe Met Ala Gly  
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Ala Ser Glu Lys Tyr Asp Ala Asn Ala Pro Gln Gln Val Gln Pro Tyr  
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Ser Val Ser Ser Ser Ala Phe Glu Asn Leu His Pro Asn Asn Glu Met  
65 70 75 80

Glu Ser Ser Ile Asn Pro Phe Ser Ala Ser Asp Thr Glu Arg Asn Ala  
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Ala Ile Ile Asp Arg Ala Asn Lys Glu Gln Glu Thr Glu Ala Val Asn  
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Lys Met Ile Ser Thr Gly Ala Arg Leu Ala Ala Ser Gly Arg Ala Ser  
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Asp Val Ala His Ser Met Val Gly Asp Ala Val Asn Gln Glu Ile Lys  
130 135 140

Gln Trp Leu Asn Arg Phe Gly Thr Ala Gln Val Asn Leu Asn Phe Asp  
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Lys Asn Phe Ser Leu Lys Glu Ser Ser Leu Asp Trp Leu Ala Pro Trp  
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Tyr Asp Ser Ala Ser Phe Leu Phe Phe Ser Gln Leu Gly Ile Arg Asn  
180 185 190

Lys Asp Ser Arg Asn Thr Leu Asn Leu Gly Val Gly Ile Arg Thr Leu  
195 200 205

Glu Asn Gly Trp Leu Tyr Gly Leu Asn Thr Phe Tyr Asp Asn Asp Leu  
210 215 220

Thr Gly His Asn His Arg Ile Gly Leu Gly Ala Glu Ala Trp Thr Asp  
225 230 235 240

Tyr Leu Gln Leu Ala Ala Asn Gly Tyr Phe Arg Leu Asn Gly Trp His  
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Ser Ser Arg Asp Phe Ser Asp Tyr Lys Glu Arg Pro Ala Thr Gly Gly  
260 265 270

Asp Leu Arg Ala Asn Ala Tyr Leu Pro Ala Leu Pro Gln Leu Gly Gly  
275 280 285

Lys Leu Met Tyr Glu Gln Tyr Thr Gly Glu Arg Val Ala Leu Phe Gly  
290 295 300

Lys Asp Asn Leu Gln Arg Asn Pro Tyr Ala Val Thr Ala Gly Ile Asn  
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Tyr Thr Pro Val Pro Leu Leu Thr Val Gly Val Asp Gln Arg Met Gly  
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Lys Ser Ser Lys His Glu Thr Gln Trp Asn Leu Gln Met Asn Tyr Arg  
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Leu Gly Glu Ser Phe Gln Ser Gln Leu Ser Pro Ser Ala Val Ala Gly  
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Thr Arg Leu Leu Ala Glu Ser Arg Tyr Asn Leu Val Asp Arg Asn Asn  
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Asn Ile Val Leu Glu Tyr Gln Lys Gln Gln Val Val Lys Leu Thr Leu  
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Ser Pro Ala Thr Ile Ser Gly Leu Pro Gly Gln Val Tyr Gln Val Asn  
405 410 415

Ala Gln Val Gln Gly Ala Ser Ala Val Arg Glu Ile Val Trp Ser Asp  
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Ala Glu Leu Ile Ala Ala Gly Gly Thr Leu Thr Pro Leu Ser Thr Thr  
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Gln Phe Asn Leu Val Leu Pro Pro Tyr Lys Arg Thr Ala Gln Val Ser  
450 455 460

Arg Val Thr Asp Asp Leu Thr Ala Asn Phe Tyr Ser Leu Ser Ala Leu  
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Ala Val Asp His Gln Gly Asn Arg Ser Asn Ser Phe Thr Leu Ser Val  
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Thr Val Gln Gln Pro Gln Leu Thr Leu Thr Ala Ala Val Ile Gly Asp  
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Asn Gly Val Ala Arg Ile Ala Leu Thr Asn Thr Thr Asp Gly Val Thr  
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Val Val Thr Ala Glu Val Glu Gly Gln Arg Gln Ser Val Asp Thr His  
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Phe Val Lys Gly Thr Ile Ala Ala Asp Lys Ser Thr Leu Ala Ala Val  
595 600 605

Pro Thr Ser Ile Ile Ala Asp Gly Leu Met Ala Ser Thr Ile Thr Leu  
610 615 620

Glu Leu Lys Asp Thr Tyr Gly Asp Pro Gln Ala Gly Ala Asn Val Ala  
625 630 635 640

Phe Asp Thr Thr Leu Gly Asn Met Gly Val Ile Thr Asp His Asn Asp  
645 650 655

Gly Thr Tyr Ser Ala Pro Leu Thr Ser Thr Thr Leu Gly Val Ala Thr  
660 665 670

Val Thr Val Lys Val Asp Gly Ala Ala Phe Ser Val Pro Ser Val Thr  
675 680 685

Val Asn Phe Thr Ala Asp Pro Ile Pro Asp Ala Gly Arg Ser Ser Phe  
690 695 700

Thr Val Ser Thr Pro Asp Ile Leu Ala Asp Gly Thr Met Ser Ser Thr  
705 710 715 720

Leu Ser Phe Val Pro Val Asp Lys Asn Gly His Phe Ile Ser Gly Met  
725 730 735

Gln Gly Leu Ser Phe Thr Gln Asn Gly Val Pro Val Ser Ile Ser Pro  
740 745 750

Ile Thr Glu Gln Pro Asp Ser Tyr Thr Ala Thr Val Val Gly Asn Ser  
755 760 765

Val Gly Asp Val Thr Ile Thr Pro Gln Val Asp Thr Leu Ile Leu Ser  
770 775 780

Thr Leu Gln Lys Lys Ile Ser Leu Phe Pro Val Pro Thr Leu Thr Gly  
785 790 795 800

Ile Leu Val Asn Gly Gln Asn Phe Ala Thr Asp Lys Gly Phe Pro Lys  
805 810 815

Thr Ile Phe Lys Asn Ala Thr Phe Gln Leu Gln Met Asp Asn Asp Val  
820 825 830

Ala Asn Asn Thr Gln Tyr Glu Trp Ser Ser Ser Phe Thr Pro Asn Val  
835 840 845

Ser Val Asn Asp Gln Gly Gln Val Thr Ile Thr Tyr Gln Thr Tyr Ser  
850 855 860

Glu Val Ala Val Thr Ala Lys Ser Lys Lys Phe Pro Ser Tyr Ser Val  
865 870 875 880

Ser Tyr Arg Phe Tyr Pro Asn Arg Trp Ile Tyr Asp Gly Gly Arg Ser  
885 890 895

Leu Val Ser Ser Leu Glu Ala Ser Arg Gln Cys Gln Gly Ser Asp Met  
900 905 910

Ser Ala Val Leu Glu Ser Ser Arg Ala Thr Asn Gly Thr Arg Ala Pro  
915 920 925

Asp Gly Thr Leu Trp Gly Glu Trp Gly Ser Leu Thr Ala Tyr Ser Ser  
930 935 940

Asp Trp Gln Ser Gly Glu Tyr Trp Val Lys Lys Thr Ser Thr Asp Phe  
 945 950 955 960

Glu Thr Met Asn Met Asp Thr Gly Ala Leu Gln Pro Gly Pro Ala Tyr  
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Leu Ala Phe Pro Leu Cys Ala Leu Ser Ile  
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 aaagaaaatt taagtataat acagcaggat tctttaacgg attcttaaca atttttctaa 120  
 ctgaccataa aggaacccaaa at atg aaa aaa gca ctt gcc aca ctg att gcc 172  
 Met Lys Lys Ala Leu Ala Thr Leu Ile Ala  
 1 5 10  
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 Leu Ala Leu Pro Ala Ala Ala Leu Ala Glu Gly Ala Ser Gly Phe Tyr  
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 gtc caa gcc gat gcc gca cac gca aaa gcc tca agc tct tta ggt tct 268  
 Val Gln Ala Asp Ala Ala His Ala Lys Ala Ser Ser Ser Leu Gly Ser  
 30 35 40  
 gcc aaa ggc ttc agc ccg cgc atc tcc gca ggc tac cgc atc aac gac 316  
 Ala Lys Gly Phe Ser Pro Arg Ile Ser Ala Gly Tyr Arg Ile Asn Asp  
 45 50 55  
 ctc cgc ttc gcc gtc gat tac acg cgc tac aaa aac tat aaa gcc cca 364  
 Leu Arg Phe Ala Val Asp Tyr Thr Arg Tyr Lys Asn Tyr Lys Ala Pro  
 60 65 70  
 tcc acc gat ttc aaa ctt tac agc atc ggc gcg tcc gcc att tac gac 412

Ser Thr Asp Phe Lys Leu Tyr Ser Ile Gly Ala Ser Ala Ile Tyr Asp  
 75 80 85 90  
 ttc gac acc caa tcg ccc gtc aaa ccg tat ctc ggc gcg cgc ttg agc 460  
 Phe Asp Thr Gln Ser Pro Val Lys Pro Tyr Leu Gly Ala Arg Leu Ser  
 95 100 105  
 ctc aac cgc gcc tcc gtc gac ttg ggc ggc agc gac agc ttc agc caa 508  
 Leu Asn Arg Ala Ser Val Asp Leu Gly Gly Ser Asp Ser Phe Ser Gln  
 110 115 120  
 acc tcc atc ggc ctc ggc gta ttg acg ggc gta agc tat gcc gtt acc 556  
 Thr Ser Ile Gly Leu Gly Val Leu Thr Gly Val Ser Tyr Ala Val Thr  
 125 130 135  
 ccg aat gtc gat ttg gat gcc ggc tac cgc tac aac tac atc ggc aaa 604  
 Pro Asn Val Asp Leu Asp Ala Gly Tyr Arg Tyr Asn Tyr Ile Gly Lys  
 140 145 150  
 gtc aac act gtc aaa aac gtc cgt tcc ggc gaa ctg tcc gtc ggc gtg 652  
 Val Asn Thr Val Lys Asn Val Arg Ser Gly Glu Leu Ser Val Gly Val  
 155 160 165 170  
 cgc gtc aaa ttc tga tatgcgcctt attctgcaaa ccgccgagcc ttccgpcggtt 707  
 Arg Val Lys Phe  
 ttgttttctg ccaccgcaac tacacaagcc ggcggttttg tacgataatc ccgaatgctg 767  
 cggtttctgc cgcctatattt ttgaggaat ccgaaatgtc caaaaccatc atccacaccg 827  
 aca 830  
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 His Ala Lys Ala Ser Ser Ser Leu Gly Ser Ala Lys Gly Phe Ser Pro  
 35 40 45  
 Arg Ile Ser Ala Gly Tyr Arg Ile Asn Asp Leu Arg Phe Ala Val Asp  
 50 55 60  
 Tyr Thr Arg Tyr Lys Asn Tyr Lys Ala Pro Ser Thr Asp Phe Lys Leu  
 65 70 75 80  
 Tyr Ser Ile Gly Ala Ser Ala Ile Tyr Asp Phe Asp Thr Gln Ser Pro  
 85 90 95

Val Lys Pro Tyr Leu Gly Ala Arg Leu Ser Leu Asn Arg Ala Ser Val  
100 105 110

Asp Leu Gly Gly Ser Asp Ser Phe Ser Gln Thr Ser Ile Gly Leu Gly  
115 120 125

Val Leu Thr Gly Val Ser Tyr Ala Val Thr Pro Asn Val Asp Leu Asp  
130 135 140

Ala Gly Tyr Arg Tyr Asn Tyr Ile Gly Lys Val Asn Thr Val Lys Asn  
145 150 155 160

Val Arg Ser Gly Glu Leu Ser Val Gly Val Arg Val Lys Phe  
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Gly Ser Gly Asp Tyr Asp Ser Met Lys Glu Pro Cys Phe Arg Glu Glu  
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Asn Ala Asn Phe Asn Lys Ile Phe Leu Pro Thr Ile Tyr Ser Ile Ile  
35 40 45

Phe Leu Thr Gly Ile Val Gly Asn Gly Leu Val Ile Leu Val Met Gly  
50 55 60

Tyr Gln Lys Lys Leu Arg Ser Met Thr Asp Lys Tyr Arg Leu His Leu  
65 70 75 80

Ser Val Ala Asp Leu Leu Phe Val Ile Thr Leu Pro Phe Trp Ala Val  
85 90 95

Asp Ala Val Ala Asn Trp Tyr Phe Gly Asn Phe Leu Cys Lys Ala Val  
100 105 110

His Val Ile Tyr Thr Val Asn Leu Tyr Ser Ser Val Leu Ile Leu Ala  
115 120 125

Phe Ile Ser Leu Asp Arg Tyr Leu Ala Ile Val His Ala Thr Asn Ser  
130 135 140

Gln Arg Pro Arg Lys Leu Leu Ala Glu Lys Val Val Tyr Val Gly Val  
145 150 155 160



gca gtg gag ttt gac ggg ggc gtt gtg atg ggt tct gat tcc cga gtg 99  
Ala Val Glu Phe Asp Gly Gly Val Val Met Gly Ser Asp Ser Arg Val

15	20	25	30	
tct gca ggc gag gcg gtg gtg aac cga gtg ttt gac aag ctg tcc ccg				147
Ser Ala Gly Glu Ala Val Val Asn Arg Val Phe Asp Lys Leu Ser Pro	35	40	45	
ctg cac gag cgc atc tac tgt gca ctc tct ggt tca gct gct gat gcc				195
Leu His Glu Arg Ile Tyr Cys Ala Leu Ser Gly Ser Ala Ala Asp Ala	50	55	60	
caa gcc gtg gcc gac atg gcc gcc tac cag ctg gag ctc cat ggg ata				243
Gln Ala Val Ala Asp Met Ala Ala Tyr Gln Leu Glu Leu His Gly Ile	65	70	75	
gaa ctg gag gaa cct cca ctt gtt ttg gct gct gca aat gtg gtg aga				291
Glu Leu Glu Glu Pro Pro Leu Val Leu Ala Ala Ala Asn Val Val Arg	80	85	90	
aat atc agc tat aaa tat cga gag gac ttg tct gca cat ctc atg gta				339
Asn Ile Ser Tyr Lys Tyr Arg Glu Asp Leu Ser Ala His Leu Met Val	95	100	105	110
gct ggc tgg gac caa cgt gaa gga ggt cag gta tat gga acc ctg gga				387
Ala Gly Trp Asp Gln Arg Glu Gly Gly Gln Val Tyr Gly Thr Leu Gly	115	120	125	
gga atg ctg act cga cag cct ttt gcc att ggt ggc tcc ggc agc acc				435
Gly Met Leu Thr Arg Gln Pro Phe Ala Ile Gly Gly Ser Gly Ser Thr	130	135	140	
ttt atc tat ggt tat gtg gat gca gca tat aag cca ggc atg tct ccc				483
Phe Ile Tyr Gly Tyr Val Asp Ala Ala Tyr Lys Pro Gly Met Ser Pro	145	150	155	
gag gag tgc agg cgc ttc acc aca gac gct att gct ctg gcc atg agc				531
Glu Glu Cys Arg Arg Phe Thr Asp Ala Ile Ala Leu Ala Met Ser	160	165	170	
cgg gat ggc tca agc ggg ggt gtc atc tac ctg gtc act att aca gct				579
Arg Asp Gly Ser Ser Gly Gly Val Ile Tyr Leu Val Thr Ile Thr Ala	175	180	185	190
gcc ggt gtg gac cat cga gtc atc ttg ggc aat gaa ctg cca aaa ttc				627
Ala Gly Val Asp His Arg Val Ile Leu Gly Asn Glu Leu Pro Lys Phe	195	200	205	
tat gat gag tga accttc				645
Tyr Asp Glu				

<210> 39 <211> 209 <212> PRT <213> Homo sapiens <400> 39

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20 25 30

Gly Glu Ala Val Val Asn Arg Val Phe Asp Lys Leu Ser Pro Leu His  
35 40 45

Glu Arg Ile Tyr Cys Ala Leu Ser Gly Ser Ala Ala Asp Ala Gln Ala  
50 55 60

Val Ala Asp Met Ala Ala Tyr Gln Leu Glu Leu His Gly Ile Glu Leu  
65 70 75 80

Glu Glu Pro Pro Leu Val Leu Ala Ala Ala Asn Val Val Arg Asn Ile  
85 90 95

Ser Tyr Lys Tyr Arg Glu Asp Leu Ser Ala His Leu Met Val Ala Gly  
100 105 110

Trp Asp Gln Arg Glu Gly Gly Gln Val Tyr Gly Thr Leu Gly Gly Met  
115 120 125

Leu Thr Arg Gln Pro Phe Ala Ile Gly Gly Ser Gly Ser Thr Phe Ile  
130 135 140

Tyr Gly Tyr Val Asp Ala Ala Tyr Lys Pro Gly Met Ser Pro Glu Glu  
145 150 155 160

Cys Arg Arg Phe Thr Thr Asp Ala Ile Ala Leu Ala Met Ser Arg Asp  
165 170 175

Gly Ser Ser Gly Gly Val Ile Tyr Leu Val Thr Ile Thr Ala Ala Gly  
180 185 190

Val Asp His Arg Val Ile Leu Gly Asn Glu Leu Pro Lys Phe Tyr Asp  
195 200 205

Glu

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<222> (1)..(2247) <223>

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gga gct tct ctc gca tgg ctg ggg aca gta ctg cta ctt ctc gcc gac 96  
Gly Ala Ser Leu Ala Trp Leu Gly Thr Val Leu Leu Leu Leu Ala Asp  
20 25 30

tgg gtg ctg ctc cgg acc gcg ctg ccc cgc ata ttc tcc ctg ctg gtg	144
Trp Val Leu Leu Arg Thr Ala Leu Pro Arg Ile Phe Ser Leu Leu Val	
35 40 45	
ccc acc gcg ctg cca ctg ctc cgg gtc tgg gcg gtg ggc ctg agc cgc	192
Pro Thr Ala Leu Pro Leu Leu Arg Val Trp Ala Val Gly Leu Ser Arg	
50 55 60	
tgg gcc gtg ctc tgg ctg ggg gcc tgc ggg gtc ctc agg gca acg gtt	240
Trp Ala Val Leu Trp Leu Gly Ala Cys Gly Val Leu Arg Ala Thr Val	
65 70 75 80	
ggc tcc aag agc gaa aac gca ggt gcc cag ggc tgg ctg gct gct ttg	288
Gly Ser Lys Ser Glu Asn Ala Gly Ala Gln Gly Trp Leu Ala Ala Leu	
85 90 95	
aag cca tta gct gcg gca ctg ggc ttg gcc ctg ccg gga ctt gcc ttg	336
Lys Pro Leu Ala Ala Ala Leu Gly Leu Ala Leu Pro Gly Leu Ala Leu	
100 105 110	
ttc cga gag ctg atc tca tgg gga gcc ccc ggg tcc gcg gat agc acc	384
Phe Arg Glu Leu Ile Ser Trp Gly Ala Pro Gly Ser Ala Asp Ser Thr	
115 120 125	
agg cta ctg cac tgg gga agt cac cct acc gcc ttc gtt gtc agt tat	432
Arg Leu Leu His Trp Gly Ser His Pro Thr Ala Phe Val Val Ser Tyr	
130 135 140	
gca gcg gca ctg ccc gca gca gcc ctg tgg cac aaa ctc ggg agc ctc	480
Ala Ala Ala Leu Pro Ala Ala Ala Leu Trp His Lys Leu Gly Ser Leu	
145 150 155 160	
tgg gtg ccc ggc ggt cag ggc ggc tct gga aac cct gtg cgt cgg ctt	528
Trp Val Pro Gly Gly Gln Gly Gly Ser Gly Asn Pro Val Arg Arg Leu	
165 170 175	
cta ggc tgc ctg ggc tgc gag acg cgc cgc ctc tgc ctg ttc ctg gtc	576
Leu Gly Cys Leu Gly Ser Glu Thr Arg Arg Leu Ser Leu Phe Leu Val	
180 185 190	
ctg gtg gtc ctc tcc tct ctt ggg gag atg gcc att cca ttc ttt acg	624
Leu Val Val Leu Ser Ser Leu Gly Glu Met Ala Ile Pro Phe Phe Thr	
195 200 205	
ggc cgc ctc act gac tgg att cta caa gat ggc tca gcc gat acc ttc	672
Gly Arg Leu Thr Asp Trp Ile Leu Gln Asp Gly Ser Ala Asp Thr Phe	
210 215 220	
act cga aac tta act ctc atg tcc att ctc acc ata gcc agt gca gtg	720
Thr Arg Asn Leu Thr Leu Met Ser Ile Leu Thr Ile Ala Ser Ala Val	
225 230 235 240	
ctg gag ttc gtg ggt gac ggg atc tat aac aac acc atg ggc cac gtg	768
Leu Glu Phe Val Gly Asp Gly Ile Tyr Asn Asn Thr Met Gly His Val	
245 250 255	
cac agc cac ttg cag gga gag gtg ttt ggg gct gtc ctg cgc cag gag	816
His Ser His Leu Gln Gly Glu Val Phe Gly Ala Val Leu Arg Gln Glu	
260 265 270	

acg gag ttt ttc caa cag aac cag aca ggt aac atc atg tct cgg gta Thr Glu Phe Phe Gln Gln Asn Gln Thr Gly Asn Ile Met Ser Arg Val 275 280 285	864
aca gag gac acg tcc acc ctg agt gat tct ctg agt gag aat ctg agc Thr Glu Asp Thr Ser Thr Leu Ser Asp Ser Leu Ser Glu Asn Leu Ser 290 295 300	912
tta ttt ctg tgg tac ctg gtg cga ggc cta tgt ctc ttg ggg atc atg Leu Phe Leu Trp Tyr Leu Val Arg Gly Leu Cys Leu Leu Gly Ile Met 305 310 315 320	960
ctc tgg gga tca gtg tcc ctc acc atg gtc acc ctg gtc acc ctg cct Leu Trp Gly Ser Val Ser Leu Thr Met Val Thr Leu Val Thr Leu Pro 325 330 335	1008
ctg ctt ttc ctt ctg ccc aag aag gtg gga aaa tgg tac cag ttg ctg Leu Leu Phe Leu Leu Pro Lys Lys Val Gly Lys Trp Tyr Gln Leu Leu 340 345 350	1056
gaa gtg cag gtg cgg gaa tct ctg gca aag tcc agc cag gtg gcc att Glu Val Gln Val Arg Glu Ser Leu Ala Lys Ser Ser Gln Val Ala Ile 355 360 365	1104
gag gct ctg tcg gcc atg cct aca gtt cga agc ttt gcc aac gag gag Glu Ala Leu Ser Ala Met Pro Thr Val Arg Ser Phe Ala Asn Glu Glu 370 375 380	1152
ggc gaa gcc cag aag ttt agg gaa aag ctg caa gaa ata aag aca ctc Gly Glu Ala Gln Lys Phe Arg Glu Lys Leu Gln Glu Ile Lys Thr Leu 385 390 395 400	1200
aac cag aag gag gct gtg gcc tat gca gtc aac tcc tgg acc act agt Asn Gln Lys Glu Ala Val Ala Tyr Ala Val Asn Ser Trp Thr Thr Ser 405 410 415	1248
att tca ggt atg ctg ctg aaa gtg gga atc ctc tac att ggt ggg cag Ile Ser Gly Met Leu Leu Lys Val Gly Ile Leu Tyr Ile Gly Gly Gln 420 425 430	1296
ctg gtg acc agt ggg gct gta agc agt ggg aac ctt gtc aca ttt gtt Leu Val Thr Ser Gly Ala Val Ser Ser Gly Asn Leu Val Thr Phe Val 435 440 445	1344
ctc tac cag atg cag ttc acc cag gct ttg gag gta ctg ctc tcc atc Leu Tyr Gln Met Gln Phe Thr Gln Ala Leu Glu Val Leu Leu Ser Ile 450 455 460	1392
tac ccc aga gta cag aag gct gtg ggc tcc tca gag aaa ata ttt gag Tyr Pro Arg Val Gln Lys Ala Val Gly Ser Ser Glu Lys Ile Phe Glu 465 470 475 480	1440
tac ctg gac cgc acc cct cgc tgc cca ccc agt ggt ctg ttg act ccc Tyr Leu Asp Arg Thr Pro Arg Cys Pro Pro Ser Gly Leu Leu Thr Pro 485 490 495	1488
tta cac ttg gag ggc ctt gtc cag ttc caa gat gtc tcc ttt gcc tac Leu His Leu Glu Gly Leu Val Gln Phe Gln Asp Val Ser Phe Ala Tyr 500 505 510	1536

cca aac cgc cca gat gtc tta gtg cta cag ggg ctg aca ttc acc cta	1584
Pro Asn Arg Pro Asp Val Leu Val Leu Gln Gly Leu Thr Phe Thr Leu	
515 520 525	
cgc cct ggc gag gtg acg gcg ctg gtg gga ccc aat ggg tct ggg aag	1632
Arg Pro Gly Glu Val Thr Ala Leu Val Gly Pro Asn Gly Ser Gly Lys	
530 535 540	
agc aca gtg gct gcc ctg ctg cag aat ctg tac cag ccc acc ggg gga	1680
Ser Thr Val Ala Ala Leu Leu Gln Asn Leu Tyr Gln Pro Thr Gly Gly	
545 550 555 560	
cag ctg ctg ttg gat ggg aag ccc ctt ccc caa tat gag cac cgc tac	1728
Gln Leu Leu Leu Asp Gly Lys Pro Leu Pro Gln Tyr Glu His Arg Tyr	
565 570 575	
ctg cac agg cag gtg gct gca gtg gga caa gag cca cag gta ttt gga	1776
Leu His Arg Gln Val Ala Ala Val Gly Gln Glu Pro Gln Val Phe Gly	
580 585 590	
aga agt ctt caa gaa aat att gcc tat ggc ctg acc cag aag cca act	1824
Arg Ser Leu Gln Glu Asn Ile Ala Tyr Gly Leu Thr Gln Lys Pro Thr	
595 600 605	
atg gag gaa atc aca gct gct gca gta aag tct ggg gcc cat agt ttc	1872
Met Glu Glu Ile Thr Ala Ala Ala Val Lys Ser Gly Ala His Ser Phe	
610 615 620	
atc tct gga ctc cct cag ggc tat gac aca gag gta ggc gag gct ggg	1920
Ile Ser Gly Leu Pro Gln Gly Tyr Asp Thr Gln Val Gly Glu Ala Gly	
625 630 635 640	
agc cag ctg tca ggg ggt cag caa cag gca gtg gcg ttg gcc cga gca	1968
Ser Gln Leu Ser Gly Gly Gln Gln Gln Ala Val Ala Leu Ala Arg Ala	
645 650 655	
ttg atc cgg aaa ccg tgt gta ctt atc ctg gat gat gcc acc agt gcc	2016
Leu Ile Arg Lys Pro Cys Val Leu Ile Leu Asp Asp Ala Thr Ser Ala	
660 665 670	
ctg gat gca aac agc cag tta cag gtg gag cag ctc ctg tac gaa agc	2064
Leu Asp Ala Asn Ser Gln Leu Gln Val Glu Gln Leu Leu Tyr Glu Ser	
675 680 685	
cct gag cgg tac tcc cgc tca gtg ctt ctc atc acc cag cac ctc agc	2112
Pro Glu Arg Tyr Ser Arg Ser Val Leu Leu Ile Thr Gln His Leu Ser	
690 695 700	
ctg gtg gag cag gct gac cac atc ctc ttt ctg gaa gga ggc gct atc	2160
Leu Val Glu Gln Ala Asp His Ile Leu Phe Leu Glu Gly Gly Ala Ile	
705 710 715 720	
cgg gag ggg gga acc cac cag cag ctc atg gag aaa aag ggg tgc tac	2208
Arg Glu Gly Gly Thr His Gln Gln Leu Met Glu Lys Lys Gly Cys Tyr	
725 730 735	
tgg gcc atg gtg cag gct cct gca gat gct cca gaa tga	2247
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740 745	

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 Trp Val Leu Leu Arg Thr Ala Leu Pro Arg Ile Phe Ser Leu Leu Val  
 35 40 45  
 Pro Thr Ala Leu Pro Leu Leu Arg Val Trp Ala Val Gly Leu Ser Arg  
 50 55 60  
 Trp Ala Val Leu Trp Leu Gly Ala Cys Gly Val Leu Arg Ala Thr Val  
 65 70 75 80  
 Gly Ser Lys Ser Glu Asn Ala Gly Ala Gln Gly Trp Leu Ala Ala Leu  
 85 90 95  
 Lys Pro Leu Ala Ala Ala Leu Gly Leu Ala Leu Pro Gly Leu Ala Leu  
 100 105 110  
 Phe Arg Glu Leu Ile Ser Trp Gly Ala Pro Gly Ser Ala Asp Ser Thr  
 115 120 125  
 Arg Leu Leu His Trp Gly Ser His Pro Thr Ala Phe Val Val Ser Tyr  
 130 135 140  
 Ala Ala Ala Leu Pro Ala Ala Ala Leu Trp His Lys Leu Gly Ser Leu  
 145 150 155 160  
 Trp Val Pro Gly Gly Gln Gly Gly Ser Gly Asp Pro Val Arg Arg Leu  
 165 170 175  
 Leu Gly Cys Leu Gly Ser Glu Thr Arg Arg Leu Ser Leu Phe Leu Val  
 180 185 190  
 Leu Val Val Leu Ser Ser Leu Gly Glu Met Ala Ile Pro Phe Phe Thr  
 195 200 205  
 Gly Arg Leu Thr Asp Trp Ile Leu Gln Asp Gly Ser Ala Asp Thr Phe  
 210 215 220

Thr Arg Asn Leu Thr Leu Met Ser Ile Leu Thr Ile Ala Ser Ala Val  
225 230 235 240

Leu Glu Phe Val Gly Asp Gly Ile Tyr Asn Asn Thr Met Gly His Val  
245 250 255

His Ser His Leu Gln Gly Glu Val Phe Gly Ala Val Leu Arg Gln Glu  
260 265 270

Thr Glu Phe Phe Gln Gln Asn Gln Thr Gly Asn Ile Met Ser Arg Val  
275 280 285

Thr Glu Asp Thr Ser Thr Leu Ser Asp Ser Leu Ser Glu Asn Leu Ser  
290 295 300

Leu Phe Leu Trp Tyr Leu Val Arg Gly Leu Cys Leu Leu Gly Ile Met  
305 310 315 320

Leu Trp Gly Ser Val Ser Leu Thr Met Val Thr Leu Val Thr Leu Pro  
325 330 335

Leu Leu Phe Leu Leu Pro Lys Lys Val Gly Lys Trp Tyr Gln Leu Leu  
340 345 350

Glu Val Gln Val Arg Glu Ser Leu Ala Lys Ser Ser Gln Val Ala Ile  
355 360 365

Glu Ala Leu Ser Ala Met Pro Thr Val Arg Ser Phe Ala Asn Glu Glu  
370 375 380

Gly Glu Ala Gln Lys Phe Arg Glu Lys Leu Gln Glu Ile Lys Thr Leu  
385 390 395 400

Asn Gln Lys Glu Ala Val Ala Tyr Ala Val Asn Ser Trp Thr Thr Ser  
405 410 415

Ile Ser Gly Met Leu Leu Lys Val Gly Ile Leu Tyr Ile Gly Gly Gln  
420 425 430

Leu Val Thr Ser Gly Ala Val Ser Ser Gly Asn Leu Val Thr Phe Val  
435 440 445

Leu Tyr Gln Met Gln Phe Thr Gln Ala Leu Glu Val Leu Leu Ser Ile  
450 455 460



Tyr Pro Arg Val Gln Lys Ala Val Gly Ser Ser Glu Lys Ile Phe Glu  
465 470 475 480

Tyr Leu Asp Arg Thr Pro Arg Cys Pro Pro Ser Gly Leu Leu Thr Pro  
485 490 495

Leu His Leu Glu Gly Leu Val Gln Phe Gln Asp Val Ser Phe Ala Tyr  
500 505 510

Pro Asn Arg Pro Asp Val Leu Val Leu Gln Gly Leu Thr Phe Thr Leu  
515 520 525

Arg Pro Gly Glu Val Thr Ala Leu Val Gly Pro Asn Gly Ser Gly Lys  
530 535 540

Ser Thr Val Ala Ala Leu Leu Gln Asn Leu Tyr Gln Pro Thr Gly Gly  
545 550 555 560

Gln Leu Leu Leu Asp Gly Lys Pro Leu Pro Gln Tyr Glu His Arg Tyr  
565 570 575

Leu His Arg Gln Val Ala Ala Val Gly Gln Glu Pro Gln Val Phe Gly  
580 585 590

Arg Ser Leu Gln Glu Asn Ile Ala Tyr Gly Leu Thr Gln Lys Pro Thr  
595 600 605

Met Glu Glu Ile Thr Ala Ala Ala Val Lys Ser Gly Ala His Ser Phe  
610 615 620

Ile Ser Gly Leu Pro Gln Gly Tyr Asp Thr Glu Val Gly Glu Ala Gly  
625 630 635 640

Ser Gln Leu Ser Gly Gly Gln Gln Gln Ala Val Ala Leu Ala Arg Ala  
645 650 655

Leu Ile Arg Lys Pro Cys Val Leu Ile Leu Asp Asp Ala Thr Ser Ala  
660 665 670

Leu Asp Ala Asn Ser Gln Leu Gln Val Glu Gln Leu Leu Tyr Glu Ser  
675 680 685

Pro Glu Arg Tyr Ser Arg Ser Val Leu Leu Ile Thr Gln His Leu Ser  
690 695 700

Leu Val Glu Gln Ala Asp His Ile Leu Phe Leu Glu Gly Gly Ala Ile  
705 710 715 720

Arg Glu Gly Gly Thr His Gln Gln Leu Met Glu Lys Lys Gly Cys Tyr  
725 730 735

Trp Ala Met Val Gln Ala Pro Ala Asp Ala Pro Glu  
740 745

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<222> (65)..(2005) <223>

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Met Ser Lys Gly Pro Ala Val Gly Ile Asp Leu Gly Thr Thr Tyr  
1 5 10 15  
tct tgt gtg ggt gtt ttc cag cac gga aaa gtc gag ata att gcc aat 157  
Ser Cys Val Gly Val Phe Gln His Gly Lys Val Glu Ile Ile Ala Asn  
20 25 30  
gat cag gga aac cga acc act cca agc tat gtc gcc ttt acg gac act 205  
Asp Gln Gly Asn Arg Thr Thr Pro Ser Tyr Val Ala Phe Thr Asp Thr  
35 40 45  
gaa cgg ttg atc ggt gat gcc gca aag aat caa gtt gca atg aac ccc 253  
Glu Arg Leu Ile Gly Asp Ala Ala Lys Asn Gln Val Ala Met Asn Pro  
50 55 60  
acc aac aca gtt ttt gat gcc aaa cgt ctg att gga cgc aga ttt gat 301  
Thr Asn Thr Val Phe Asp Ala Lys Arg Leu Ile Gly Arg Arg Phe Asp  
65 70 75  
gat gct gtt gtc cag tct gat atg aaa cat tgg ccc ttt atg gtg gtg 349  
Asp Ala Val Val Gln Ser Asp Met Lys His Trp Pro Phe Met Val Val  
80 85 90 95  
aat gat gct ggc agg ccc aag gtc caa gta gaa tac aag gga gag acc 397  
Asn Asp Ala Gly Arg Pro Lys Val Gln Val Glu Tyr Lys Gly Glu Thr  
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aaa agc ttc tat cca gag gag gtg tct tct atg gtt ctg aca aag atg 445  
Lys Ser Phe Tyr Pro Glu Glu Val Ser Ser Met Val Leu Thr Lys Met  
115 120 125  
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Lys Glu Ile Ala Glu Ala Tyr Leu Gly Lys Thr Val Thr Asn Ala Val  
130 135 140  
gtc aca gtg cca gct tac ttt aat gac tct cag cgt cag gct acc aaa 541  
Val Thr Val Pro Ala Tyr Phe Asn Asp Ser Gln Arg Gln Ala Thr Lys  
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gat gct gga act att gct ggt ctc aat gta ctt aga att att aat gag 589  
Asp Ala Gly Thr Ile Ala Gly Leu Asn Val Leu Arg Ile Ile Asn Glu

160	165	170	175	
cca act gct gct gct att gct tac ggc tta gac aaa aag gtt gga gca				637
Pro Thr Ala Ala Ala Ile Ala Tyr Gly Leu Asp Lys Lys Val Gly Ala	180	185	190	
gaa aga aac gtg ctc atc ttt gac ctg gga ggt ggc act ttt gat gtg				685
Glu Arg Asn Val Leu Ile Phe Asp Leu Gly Gly Gly Thr Phe Asp Val	195	200	205	
tca atc ctc act att gag gat gga atc ttt gag gtc aag tct aca gct				733
Ser Ile Leu Thr Ile Glu Asp Gly Ile Phe Glu Val Lys Ser Thr Ala	210	215	220	
gga gac acc cac ttg ggt gga gaa gat ttt gac aac cga atg gtc aac				781
Gly Asp Thr His Leu Gly Gly Glu Asp Phe Asp Asn Arg Met Val Asn	225	230	235	
cat ttt att gct gag ttt aag cgc aag cat aag aag gac atc agt gag				829
His Phe Ile Ala Glu Phe Lys Arg Lys His Lys Lys Asp Ile Ser Glu	240	245	250	255
aac aag aga gct gta aga cgc ctc cgt act gct tgt gaa cgt gct aag				877
Asn Lys Arg Ala Val Arg Arg Leu Arg Thr Ala Cys Glu Arg Ala Lys	260	265	270	
cgt acc ctc tct tcc agc acc cag gcc agt att gag atc gat tct ctc				925
Arg Thr Leu Ser Ser Ser Thr Gln Ala Ser Ile Glu Ile Asp Ser Leu	275	280	285	
tat gaa gga atc gac ttc tat acc tcc att acc cgt gcc cga ttt gaa				973
Tyr Glu Gly Ile Asp Phe Tyr Thr Ser Ile Thr Arg Ala Arg Phe Glu	290	295	300	
gaa ctg aat gct gac ctg ttc cgt ggc acc ctg gac cca gta gag aaa				1021
Glu Leu Asn Ala Asp Leu Phe Arg Gly Thr Leu Asp Pro Val Glu Lys	305	310	315	
gcc ctt cga gat gcc aaa cta gac aag tca cag att cat gat att gtc				1069
Ala Leu Arg Asp Ala Lys Leu Asp Lys Ser Gln Ile His Asp Ile Val	320	325	330	335
ctg gtt ggt ggt tct act cgt atc ccc aag att cag aag ctt ctc caa				1117
Leu Val Gly Gly Ser Thr Arg Ile Pro Lys Ile Gln Lys Leu Leu Gln	340	345	350	
gac ttc ttc aat gga aaa gaa ctg aat aag agc atc aac cct gat gaa				1165
Asp Phe Phe Asn Gly Lys Glu Leu Asn Lys Ser Ile Asn Pro Asp Glu	355	360	365	
gct gtt gct tat ggt gca gct gtc cag gca gcc atc ttg tct gga gac				1213
Ala Val Ala Tyr Gly Ala Ala Val Gln Ala Ala Ile Leu Ser Gly Asp	370	375	380	
aag tct gag aat gtt caa gat ttg ctg ctc ttg gat gtc act cct ctt				1261
Lys Ser Glu Asn Val Gln Asp Leu Leu Leu Leu Asp Val Thr Pro Leu	385	390	395	
tcc ctt ggt att gaa act gct ggt gga gtc atg act gtc ctc atc aag				1309
Ser Leu Gly Ile Glu Thr Ala Gly Gly Val Met Thr Val Leu Ile Lys				

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cgt aat acc acc att cct acc aag cag aca cag acc ttc act acc tat							1357
Arg Asn Thr Thr Ile Pro Thr Lys Gln Thr Gln Thr Phe Thr Thr Tyr							
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tct gac aac cag cct ggt gtg ctt att cag gtt tat gaa ggc gag cgt							1405
Ser Asp Asn Gln Pro Gly Val Leu Ile Gln Val Tyr Glu Gly Glu Arg							
	435			440		445	
gcc atg aca aag gat aac aac ctg ctt ggc aag ttt gaa ctc aca ggc							1453
Ala Met Thr Lys Asp Asn Asn Leu Leu Gly Lys Phe Glu Leu Thr Gly							
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ata cct cct gca ccc cga ggt gtt cct cag att gaa gtc act ttt gac							1501
Ile Pro Pro Ala Pro Arg Gly Val Pro Gln Ile Glu Val Thr Phe Asp							
	465			470		475	
att gat gcc aat ggt ata ctc aat gtc tct gct gtg gac aag agt acg							1549
Ile Asp Ala Asn Gly Ile Leu Asn Val Ser Ala Val Asp Lys Ser Thr							
	480			485		490	495
gga aaa gag aac aag att act atc act aat gac aag ggc cgt ttg agc							1597
Gly Lys Glu Asn Lys Ile Thr Ile Thr Asn Asp Lys Gly Arg Leu Ser							
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Lys Glu Asp Ile Glu Arg Met Val Gln Glu Ala Glu Lys Tyr Lys Ala							
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Glu Asp Glu Lys Gln Arg Asp Lys Val Ser Ser Lys Asn Ser Leu Glu							
	530			535		540	
tcc tat gcc ttc aac atg aaa gca act gtt gaa gat gag aaa ctt caa							1741
Ser Tyr Ala Phe Asn Met Lys Ala Thr Val Glu Asp Glu Lys Leu Gln							
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ggc aag att aac gat gag gac aaa cag aag att ctg gac aag tgt aat							1789
Gly Lys Ile Asn Asp Glu Asp Lys Gln Lys Ile Leu Asp Lys Cys Asn							
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gaa att atc aac tgg ctt gat aag aat cag act gct gag aag gaa gaa							1837
Glu Ile Ile Asn Trp Leu Asp Lys Asn Gln Thr Ala Glu Lys Glu Glu							
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Phe Glu His Gln Lys Glu Leu Glu Lys Val Cys Asn Pro Ile Ile							
	595			600		605	
acc aag ctg tac cag agt gca gga ggc atg cca gga gga atg cct ggg							1933
Thr Lys Leu Tyr Gln Ser Ala Gly Gly Met Pro Gly Gly Met Pro Gly							
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Gly Phe Pro Gly Gly Gly Ala Pro Pro Ser Gly Gly Ala Ser Ser Gly							
	625			630		635	
ccc acc att gaa gag gtt gat taa gccaaccaag tgtagatgta gcattgttcc							2035
Pro Thr Ile Glu Glu Val Asp							

640

645

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2085

&lt;210&gt; 43 &lt;211&gt; 646 &lt;212&gt; PRT &lt;213&gt; Homo sapiens &lt;400&gt; 43

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1 5 10 15Cys Val Gly Val Phe Gln His Gly Lys Val Glu Ile Ile Ala Asn Asp  
20 25 30Gln Gly Asn Arg Thr Thr Pro Ser Tyr Val Ala Phe Thr Asp Thr Glu  
35 40 45Arg Leu Ile Gly Asp Ala Ala Lys Asn Gln Val Ala Met Asn Pro Thr  
50 55 60Asn Thr Val Phe Asp Ala Lys Arg Leu Ile Gly Arg Arg Phe Asp Asp  
65 70 75 80Ala Val Val Gln Ser Asp Met Lys His Trp Pro Phe Met Val Val Asn  
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130 135 140Thr Val Pro Ala Tyr Phe Asn Asp Ser Gln Arg Gln Ala Thr Lys Asp  
145 150 155 160Ala Gly Thr Ile Ala Gly Leu Asn Val Leu Arg Ile Ile Asn Glu Pro  
165 170 175Thr Ala Ala Ala Ile Ala Tyr Gly Leu Asp Lys Lys Val Gly Ala Glu  
180 185 190Arg Asn Val Leu Ile Phe Asp Leu Gly Gly Gly Thr Phe Asp Val Ser  
195 200 205

Ile Leu Thr Ile Glu Asp Gly Ile Phe Glu Val Lys Ser Thr Ala Gly

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Asp Thr His Leu Gly Gly Glu Asp Phe Asp Asn Arg Met Val Asn His				
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Phe Ile Ala Glu Phe Lys Arg Lys His Lys Lys Asp Ile Ser Glu Asn				
	245		250	255
Lys Arg Ala Val Arg Arg Leu Arg Thr Ala Cys Glu Arg Ala Lys Arg				
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Thr Leu Ser Ser Ser Thr Gln Ala Ser Ile Glu Ile Asp Ser Leu Tyr				
	275		280	285
Glu Gly Ile Asp Phe Tyr Thr Ser Ile Thr Arg Ala Arg Phe Glu Glu				
	290		295	300
Leu Asn Ala Asp Leu Phe Arg Gly Thr Leu Asp Pro Val Glu Lys Ala				
305		310	315	320
Leu Arg Asp Ala Lys Leu Asp Lys Ser Gln Ile His Asp Ile Val Leu				
	325		330	335
Val Gly Gly Ser Thr Arg Ile Pro Lys Ile Gln Lys Leu Leu Gln Asp				
	340		345	350
Phe Phe Asn Gly Lys Glu Leu Asn Lys Ser Ile Asn Pro Asp Glu Ala				
	355		360	365
Val Ala Tyr Gly Ala Ala Val Gln Ala Ala Ile Leu Ser Gly Asp Lys				
	370		375	380
Ser Glu Asn Val Gln Asp Leu Leu Leu Leu Asp Val Thr Pro Leu Ser				
385		390	395	400
Leu Gly Ile Glu Thr Ala Gly Gly Val Met Thr Val Leu Ile Lys Arg				
	405		410	415
Asn Thr Thr Ile Pro Thr Lys Gln Thr Gln Thr Phe Thr Thr Tyr Ser				
	420		425	430
Asp Asn Gln Pro Gly Val Leu Ile Gln Val Tyr Glu Gly Glu Arg Ala				
	435		440	445
Met Thr Lys Asp Asn Asn Leu Leu Gly Lys Phe Glu Leu Thr Gly Ile				

450                      455                      460  
 Pro Pro Ala Pro Arg Gly Val Pro Gln Ile Glu Val Thr Phe Asp Ile  
 465                      470                      475                      480  
 Asp Ala Asn Gly Ile Leu Asn Val Ser Ala Val Asp Lys Ser Thr Gly  
 485                      490                      495  
 Lys Glu Asn Lys Ile Thr Ile Thr Asn Asp Lys Gly Arg Leu Ser Lys  
 500                      505                      510  
 Glu Asp Ile Glu Arg Met Val Gln Glu Ala Glu Lys Tyr Lys Ala Glu  
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 Asp Glu Lys Gln Arg Asp Lys Val Ser Ser Lys Asn Ser Leu Glu Ser  
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 Tyr Ala Phe Asn Met Lys Ala Thr Val Glu Asp Glu Lys Leu Gln Gly  
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 Lys Ile Asn Asp Glu Asp Lys Gln Lys Ile Leu Asp Lys Cys Asn Glu  
 565                      570                      575  
 Ile Ile Asn Trp Leu Asp Lys Asn Gln Thr Ala Glu Lys Glu Glu Phe  
 580                      585                      590  
 Glu His Gln Gln Lys Glu Leu Glu Lys Val Cys Asn Pro Ile Ile Thr  
 595                      600                      605  
 Lys Leu Tyr Gln Ser Ala Gly Gly Met Pro Gly Gly Met Pro Gly Gly  
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 Phe Pro Gly Gly Gly Ala Pro Pro Ser Gly Gly Ala Ser Ser Gly Pro  
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 Thr Ile Glu Glu Val Asp  
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 atatgacata gagtataagg aggggttttt atg aac aaa aat gtg ttg aag ttt 174

	Met	Asn	Lys	Asn	Val	Leu	Lys	Phe	
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Met Val Phe Ile Met Leu Leu Asn Ile Ile Thr Pro Leu Phe Asn Lys									
10 15 20									
aat gaa gca ttt gca gca cga gat att tca tca acg aat gtt aca gat	270								
Asn Glu Ala Phe Ala Ala Arg Asp Ile Ser Ser Thr Asn Val Thr Asp									
25 30 35 40									
tta act gta tca ccg tct aag ata gaa gat ggt ggt aaa acg aca gta	318								
Leu Thr Val Ser Pro Ser Lys Ile Glu Asp Gly Gly Lys Thr Val									
45 50 55									
aaa atg acg ttc gac gat aaa aat gga aaa ata caa aat ggt gac atg	366								
Lys Met Thr Phe Asp Asp Lys Asn Gly Lys Ile Gln Asn Gly Asp Met									
60 65 70									
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Ile Lys Val Ala Trp Pro Thr Ser Gly Thr Val Lys Ile Glu Gly Tyr									
75 80 85									
agt aaa aca gta cca tta act gtt aaa ggt gaa cag gtg ggt caa gca	462								
Ser Lys Thr Val Pro Leu Thr Val Lys Gly Glu Val Gly Gln Ala									
90 95 100									
gtt att aca cca gac ggt gca aca att aca ttc aat gat aaa gta gaa	510								
Val Ile Thr Pro Asp Gly Ala Thr Ile Thr Phe Asn Asp Lys Val Glu									
105 110 115 120									
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Lys Leu Ser Asp Val Ser Gly Phe Ala Glu Phe Glu Val Gln Gly Arg									
125 130 135									
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Asn Leu Thr Gln Thr Asn Thr Ser Asp Asp Lys Val Ala Thr Ile Thr									
140 145 150									
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Ser Gly Asn Lys Ser Thr Asn Val Thr Val His Lys Ser Glu Ala Gly									
155 160 165									
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Thr Ser Ser Val Phe Tyr Tyr Lys Thr Gly Asp Met Leu Pro Glu Asp									
170 175 180									
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Thr Thr His Val Arg Trp Phe Leu Asn Ile Asn Asn Glu Lys Ser Tyr									
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Val Ser Lys Asp Ile Thr Ile Lys Asp Gln Ile Gln Gly Gly Gln Gln									
205 210 215									
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Leu Asp Leu Ser Thr Leu Asn Ile Asn Val Thr Gly Thr His Ser Asn									
220 225 230									
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Tyr Tyr Ser Gly Gln Ser Ala Ile Thr Asp Phe Glu Lys Ala Phe Pro	
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ggt tct aaa ata act gtt gat aat acg aag aac aca att gat gta aca	942
Gly Ser Lys Ile Thr Val Asp Asn Thr Lys Asn Thr Ile Asp Val Thr	
250 255 260	
att cca caa ggc tat ggg tca tat aat agt ttt tca att aac tac aaa	990
Ile Pro Gln Gly Tyr Gly Ser Tyr Asn Ser Phe Ser Ile Asn Tyr Lys	
265 270 275 280	
acc aaa att acg aat gaa cag caa aaa gag ttt gtt aat aat tca caa	1038
Thr Lys Ile Thr Asn Glu Gln Gln Lys Glu Phe Val Asn Asn Ser Gln	
285 290 295	
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Ala Trp Tyr Gln Glu His Gly Lys Glu Glu Val Asn Gly Lys Ser Phe	
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Val Lys Gly Glu Leu Lys Val Leu Lys Gln Asp Lys Asp Thr Lys Ala	
330 335 340	
cct ata gct aat gta aaa ttt aaa ctt tct aaa aaa gat gga tca gtt	1230
Pro Ile Ala Asn Val Lys Phe Lys Leu Ser Lys Lys Asp Gly Ser Val	
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Val Lys Asp Asn Gln Lys Glu Ile Glu Ile Ile Thr Asp Ala Asn Gly	
365 370 375	
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Ile Ala Asn Ile Lys Ala Leu Pro Ser Gly Asp Tyr Ile Leu Lys Glu	
380 385 390	
ata gag gcg cca cga ccg tat aca ttt gat aag gat aaa gaa tat ccg	1374
Ile Glu Ala Pro Arg Pro Tyr Thr Phe Asp Lys Asp Lys Glu Tyr Pro	
395 400 405	
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Phe Thr Met Lys Asp Thr Asp Asn Gln Gly Tyr Phe Thr Thr Ile Glu	
410 415 420	
aat gca aaa gcg ata gaa aaa aca aaa gat gtt tct gct caa aag gtt	1470
Asn Ala Lys Ala Ile Glu Lys Thr Lys Asp Val Ser Ala Gln Lys Val	
425 430 435 440	
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Trp Glu Gly Thr Gln Lys Val Lys Pro Thr Ile Tyr Phe Lys Leu Tyr	
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Lys Gln Asp Asp Asn Gln Asn Thr Thr Pro Val Asp Lys Ala Glu Ile	
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Ile	Ser	Gly	Glu	Lys	Val	Trp	Asp	Asp	Lys	Asp	Asn	Gln	Asp	Gly	Lys		
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Trp	Asp	Asp	Asn	Asn	Asn	Gln	Asp	Gly	Lys	Arg	Pro	Thr	Glu	Ile	Lys		
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Lys	Gly	Tyr	Thr	Thr	His	Val	Asp	Asn	Asn	Asp	Met	Gly	Asn	Leu	Ile		
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Val Trp Asp Asp Lys Asp Asn Gln Asp Gly Lys Arg Pro Glu Lys Val	
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Ser Val Asn Leu Leu Ala Asp Gly Glu Lys Val Lys Thr Leu Asp Val	
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Asp Glu Gly Lys Lys Ile Glu Tyr Thr Val Thr Glu Asp His Val Lys	
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Asp Tyr Thr Thr Asp Ile Asn Gly Thr Thr Ile Thr Asn Lys Tyr Thr	
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Pro Gly Glu Thr Ser Ala Thr Val Thr Lys Asn Trp Asp Asp Asn Asn	
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845 850 855	
tgg aca cat acg tgg aca gga tta gat gaa aaa gca aaa gga caa caa	2766
Trp Thr His Thr Trp Thr Gly Leu Asp Glu Lys Ala Lys Gly Gln Gln	
860 865 870	
gta aaa tac aca gtc gag gaa tta aca aag gtc aaa ggt tat aca aca	2814
Val Lys Tyr Thr Val Glu Glu Leu Thr Lys Val Lys Gly Tyr Thr Thr	
875 880 885	
cat gtg gat aac aat gat atg ggc aac ttg att gtg acg aat aaa tat	2862
His Val Asp Asn Asn Asp Met Gly Asn Leu Ile Val Thr Asn Lys Tyr	
890 895 900	
acg cca gaa aca aca tca att agt ggt gaa aaa gta tgg gac gac aaa	2910
Thr Pro Glu Thr Thr Ser Ile Ser Gly Glu Lys Val Trp Asp Asp Lys	
905 910 915 920	
gac aat caa gat ggt aag aga cca gaa aaa gtc agt gtg aat tta ttg	2958
Asp Asn Gln Asp Gly Lys Arg Pro Glu Lys Val Ser Val Asn Leu Leu	
925 930 935	
gct aac gga gag aaa gta aaa acg tta gac gtg aca tct gaa aca aac	3006
Ala Asn Gly Glu Lys Val Lys Thr Leu Asp Val Thr Ser Glu Thr Asn	
940 945 950	
tgg aag tac gaa ttt aaa gac tta ccg aag tat gat gaa gga aag aaa	3054

Trp Lys Tyr Glu Phe Lys Asp Leu Pro Lys Tyr Asp Glu Gly Lys Lys	
955	960 965
ata gaa tat aca gtg acc gaa gat cac gta aaa gac tac aca aca gac	3102
Ile Glu Tyr Thr Val Thr Glu Asp His Val Lys Asp Tyr Thr Thr Asp	
970 975 980	
atc aac ggt acg aca ata acg aac aag tat aca cca gga gag aca tcg	3150
Ile Asn Gly Thr Thr Ile Thr Asn Lys Tyr Thr Pro Gly Glu Thr Ser	
985 990 995 1000	
gca aca gta aca aaa aat tgg gat gac aat aat aac caa gac gga	3195
Ala Thr Val Thr Lys Asn Trp Asp Asp Asn Asn Asn Gln Asp Gly	
1005 1010 1015	
aaa cga cca act gaa atc aaa gtt gag tta tat caa gat gga aaa	3240
Lys Arg Pro Thr Glu Ile Lys Val Glu Leu Tyr Gln Asp Gly Lys	
1020 1025 1030	
gca aca gga aaa acg gca ata tta aat gaa tct aat aac tgg aca	3285
Ala Thr Gly Lys Thr Ala Ile Leu Asn Glu Ser Asn Asn Trp Thr	
1035 1040 1045	
cat acg tgg aca gga tta gat gaa aaa gca aaa gga caa caa gta	3330
His Thr Trp Thr Gly Leu Asp Glu Lys Ala Lys Gly Gln Gln Val	
1050 1055 1060	
aaa tac aca gtc gat gaa tta aca aaa gtt aat ggc tat aca acg	3375
Lys Tyr Thr Val Asp Glu Leu Thr Lys Val Asn Gly Tyr Thr Thr	
1065 1070 1075	
cat gtg gat aac aat gat atg ggt aac ttg att gtg aca aat aaa	3420
His Val Asp Asn Asn Asp Met Gly Asn Leu Ile Val Thr Asn Lys	
1080 1085 1090	
tat acg ccg aaa aaa ccg aat aaa cca atc tat cct gaa aaa cca	3465
Tyr Thr Pro Lys Lys Pro Asn Lys Pro Ile Tyr Pro Glu Lys Pro	
1095 1100 1105	
aaa gac aaa aca cca cca act aaa cct gat cat tct aat aaa gtt	3510
Lys Asp Lys Thr Pro Pro Thr Lys Pro Asp His Ser Asn Lys Val	
1110 1115 1120	
aaa cca act ccc cca gat aag cca tca aaa gtg gat aag gat gat	3555
Lys Pro Thr Pro Pro Asp Lys Pro Ser Lys Val Asp Lys Asp Asp	
1125 1130 1135	
caa cct aaa gat aat aaa acc aaa cct gaa aat cct cta aaa gaa	3600
Gln Pro Lys Asp Asn Lys Thr Lys Pro Glu Asn Pro Leu Lys Glu	
1140 1145 1150	
tta cca aaa act ggt atg aag att ata act tca tgg att aca tgg	3645
Leu Pro Lys Thr Gly Met Lys Ile Ile Thr Ser Trp Ile Thr Trp	
1155 1160 1165	
gta ttt ata ggt ata ttg gga ctg tat tta att tta aga aaa aga	3690
Val Phe Ile Gly Ile Leu Gly Leu Tyr Leu Ile Leu Arg Lys Arg	
1170 1175 1180	
ttt aac tca taa accattataa ttatttttat agataaggct attcttagtt	3742

Phe Asn Ser

ctatgtataa tacatgtata ttaataggtc actttttaatc tgtatgtaag cagactaaga 3802  
gtggcctttt aaacaaataa aaaaa 3827

<210> 45 <211> 1183 <212> PRT <213> Staphylococcus aureus <400> 45

Met Asn Lys Asn Val Leu Lys Phe Met Val Phe Ile Met Leu Leu Asn  
1 5 10 15

Ile Ile Thr Pro Leu Phe Asn Lys Asn Glu Ala Phe Ala Ala Arg Asp  
20 25 30

Ile Ser Ser Thr Asn Val Thr Asp Leu Thr Val Ser Pro Ser Lys Ile  
35 40 45

Glu Asp Gly Gly Lys Thr Thr Val Lys Met Thr Phe Asp Asp Lys Asn  
50 55 60

Gly Lys Ile Gln Asn Gly Asp Met Ile Lys Val Ala Trp Pro Thr Ser  
65 70 75 80

Gly Thr Val Lys Ile Glu Gly Tyr Ser Lys Thr Val Pro Leu Thr Val  
85 90 95

Lys Gly Glu Gln Val Gly Gln Ala Val Ile Thr Pro Asp Gly Ala Thr  
100 105 110

Ile Thr Phe Asn Asp Lys Val Glu Lys Leu Ser Asp Val Ser Gly Phe  
115 120 125

Ala Glu Phe Glu Val Gln Gly Arg Asn Leu Thr Gln Thr Asn Thr Ser  
130 135 140

Asp Asp Lys Val Ala Thr Ile Thr Ser Gly Asn Lys Ser Thr Asn Val  
145 150 155 160

Thr Val His Lys Ser Glu Ala Gly Thr Ser Ser Val Phe Tyr Tyr Lys  
165 170 175

Thr Gly Asp Met Leu Pro Glu Asp Thr Thr His Val Arg Trp Phe Leu  
180 185 190

Asn Ile Asn Asn Glu Lys Ser Tyr Val Ser Lys Asp Ile Thr Ile Lys  
195 200 205

Asp Gln Ile Gln Gly Gly Gln Gln Leu Asp Leu Ser Thr Leu Asn Ile  
210 215 220

Asn Val Thr Gly Thr His Ser Asn Tyr Tyr Ser Gly Gln Ser Ala Ile  
225 230 235 240

Thr Asp Phe Glu Lys Ala Phe Pro Gly Ser Lys Ile Thr Val Asp Asn  
245 250 255

Thr Lys Asn Thr Ile Asp Val Thr Ile Pro Gln Gly Tyr Gly Ser Tyr  
260 265 270

Asn Ser Phe Ser Ile Asn Tyr Lys Thr Lys Ile Thr Asn Glu Gln Gln  
275 280 285

Lys Glu Phe Val Asn Asn Ser Gln Ala Trp Tyr Gln Glu His Gly Lys  
290 295 300

Glu Glu Val Asn Gly Lys Ser Phe Asn His Thr Val His Asn Ile Asn  
305 310 315 320

Ala Asn Ala Gly Ile Glu Gly Thr Val Lys Gly Glu Leu Lys Val Leu  
325 330 335

Lys Gln Asp Lys Asp Thr Lys Ala Pro Ile Ala Asn Val Lys Phe Lys  
340 345 350

Leu Ser Lys Lys Asp Gly Ser Val Val Lys Asp Asn Gln Lys Glu Ile  
355 360 365

Glu Ile Ile Thr Asp Ala Asn Gly Ile Ala Asn Ile Lys Ala Leu Pro  
370 375 380

Ser Gly Asp Tyr Ile Leu Lys Glu Ile Glu Ala Pro Arg Pro Tyr Thr  
385 390 395 400

Phe Asp Lys Asp Lys Glu Tyr Pro Phe Thr Met Lys Asp Thr Asp Asn  
405 410 415

Gln Gly Tyr Phe Thr Thr Ile Glu Asn Ala Lys Ala Ile Glu Lys Thr  
420 425 430

Lys Asp Val Ser Ala Gln Lys Val Trp Glu Gly Thr Gln Lys Val Lys  
435 440 445

Pro Thr Ile Tyr Phe Lys Leu Tyr Lys Gln Asp Asp Asn Gln Asn Thr  
 450 455 460

Thr Pro Val Asp Lys Ala Glu Ile Lys Lys Leu Glu Asp Gly Thr Thr  
 465 470 475 480

Lys Val Thr Trp Ser Asn Leu Pro Glu Asn Asp Lys Asn Gly Lys Ala  
 485 490 495

Ile Lys Tyr Leu Val Lys Glu Val Asn Ala Gln Gly Glu Asp Thr Thr  
 500 505 510

Pro Glu Gly Tyr Thr Lys Lys Glu Asn Gly Leu Val Val Thr Asn Thr  
 515 520 525

Glu Lys Pro Ile Glu Thr Thr Ser Ile Ser Gly Glu Lys Val Trp Asp  
 530 535 540

Asp Lys Asp Asn Gln Asp Gly Lys Arg Pro Glu Lys Val Ser Val Asn  
 545 550 555 560

Leu Leu Ala Asn Gly Glu Lys Val Lys Thr Leu Asp Val Thr Ser Glu  
 565 570 575

Thr Asn Trp Lys Tyr Glu Phe Lys Asp Leu Pro Lys Tyr Asp Glu Gly  
 580 585 590

Lys Lys Ile Glu Tyr Thr Val Thr Glu Asp His Val Lys Asp Tyr Thr  
 595 600 605

Thr Asp Ile Asn Gly Thr Thr Ile Thr Asn Lys Tyr Thr Pro Gly Glu  
 610 615 620

Thr Ser Ala Thr Val Thr Lys Asn Trp Asp Asp Asn Asn Asn Gln Asp  
 625 630 635 640

Gly Lys Arg Pro Thr Glu Ile Lys Val Glu Leu Tyr Gln Asp Gly Lys  
 645 650 655

Ala Thr Gly Lys Thr Ala Ile Leu Asn Glu Ser Asn Asn Trp Thr His  
 660 665 670

Thr Trp Thr Gly Leu Asp Glu Lys Ala Lys Gly Gln Gln Val Lys Tyr  
 675 680 685

Thr Val Glu Glu Leu Thr Lys Val Lys Gly Tyr Thr Thr His Val Asp  
690 695 700

Asn Asn Asp Met Gly Asn Leu Ile Val Thr Asn Lys Tyr Thr Pro Glu  
705 710 715 720

Thr Thr Ser Ile Ser Gly Glu Lys Val Trp Asp Asp Lys Asp Asn Gln  
725 730 735

Asp Gly Lys Arg Pro Glu Lys Val Ser Val Asn Leu Leu Ala Asp Gly  
740 745 750

Glu Lys Val Lys Thr Leu Asp Val Thr Ser Glu Thr Asn Trp Lys Tyr  
755 760 765

Glu Phe Lys Asp Leu Pro Lys Tyr Asp Glu Gly Lys Lys Ile Glu Tyr  
770 775 780

Thr Val Thr Glu Asp His Val Lys Asp Tyr Thr Thr Asp Ile Asn Gly  
785 790 795 800

Thr Thr Ile Thr Asn Lys Tyr Thr Pro Gly Glu Thr Ser Ala Thr Val  
805 810 815

Thr Lys Asn Trp Asp Asp Asn Asn Asn Gln Asp Gly Lys Arg Pro Thr  
820 825 830

Glu Ile Lys Val Glu Leu Tyr Gln Asp Gly Lys Ala Thr Gly Lys Thr  
835 840 845

Ala Ile Leu Asn Glu Ser Asn Asn Trp Thr His Thr Trp Thr Gly Leu  
850 855 860

Asp Glu Lys Ala Lys Gly Gln Gln Val Lys Tyr Thr Val Glu Glu Leu  
865 870 875 880

Thr Lys Val Lys Gly Tyr Thr Thr His Val Asp Asn Asn Asp Met Gly  
885 890 895

Asn Leu Ile Val Thr Asn Lys Tyr Thr Pro Glu Thr Thr Ser Ile Ser  
900 905 910

Gly Glu Lys Val Trp Asp Asp Lys Asp Asn Gln Asp Gly Lys Arg Pro  
915 920 925



Glu Lys Val Ser Val Asn Leu Leu Ala Asn Gly Glu Lys Val Lys Thr  
 930 935 940

Leu Asp Val Thr Ser Glu Thr Asn Trp Lys Tyr Glu Phe Lys Asp Leu  
 945 950 955 960

Pro Lys Tyr Asp Glu Gly Lys Lys Ile Glu Tyr Thr Val Thr Glu Asp  
 965 970 975

His Val Lys Asp Tyr Thr Thr Asp Ile Asn Gly Thr Thr Ile Thr Asn  
 980 985 990

Lys Tyr Thr Pro Gly Glu Thr Ser Ala Thr Val Thr Lys Asn Trp Asp  
 995 1000 1005

Asp Asn Asn Asn Gln Asp Gly Lys Arg Pro Thr Glu Ile Lys Val  
 1010 1015 1020

Glu Leu Tyr Gln Asp Gly Lys Ala Thr Gly Lys Thr Ala Ile Leu  
 1025 1030 1035

Asn Glu Ser Asn Asn Trp Thr His Thr Trp Thr Gly Leu Asp Glu  
 1040 1045 1050

Lys Ala Lys Gly Gln Gln Val Lys Tyr Thr Val Asp Glu Leu Thr  
 1055 1060 1065

Lys Val Asn Gly Tyr Thr Thr His Val Asp Asn Asn Asp Met Gly  
 1070 1075 1080

Asn Leu Ile Val Thr Asn Lys Tyr Thr Pro Lys Lys Pro Asn Lys  
 1085 1090 1095

Pro Ile Tyr Pro Glu Lys Pro Lys Asp Lys Thr Pro Pro Thr Lys  
 1100 1105 1110

Pro Asp His Ser Asn Lys Val Lys Pro Thr Pro Pro Asp Lys Pro  
 1115 1120 1125

Ser Lys Val Asp Lys Asp Asp Gln Pro Lys Asp Asn Lys Thr Lys  
 1130 1135 1140

Pro Glu Asn Pro Leu Lys Glu Leu Pro Lys Thr Gly Met Lys Ile  
 1145 1150 1155

Ile Thr Ser Trp Ile Thr Trp Val Phe Ile Gly Ile Leu Gly Leu  
 1160 1165 1170

Tyr Leu Ile Leu Arg Lys Arg Phe Asn Ser  
 1175 1180

<210> 46 <211> 9 <212> PRT <213> Homo sapiens <220> <221>  
 MISC\_FEATURE <222> (4)..(4) <223> Xaa can be any amino acid

<220> <221> MISC\_FEATURE <222> (6)..(7) <223> Xaa can be any amino  
 acid

<400> 46

Ile Leu Val Xaa Tyr Xaa Xaa Leu Val  
 1 5

<210> 49 <211> 237 <212> PRT <213> Homo sapiens <400> 49

Met Thr Ser Glu Ile Thr Tyr Ala Glu Val Arg Phe Lys Asn Glu Phe  
 1 5 10 15

Lys Ser Ser Gly Ile Asn Thr Ala Ser Ser Ala Ala Ser Lys Glu Arg  
 20 25 30

Thr Ala Pro His Lys Ser Asn Thr Gly Phe Pro Lys Leu Leu Cys Ala  
 35 40 45

Ser Leu Leu Ile Phe Phe Leu Leu Leu Ala Ile Ser Phe Phe Ile Ala  
 50 55 60

Phe Val Ile Phe Phe Gln Lys Tyr Ser Gln Leu Leu Glu Lys Lys Thr  
 65 70 75 80

Thr Lys Glu Leu Val His Thr Thr Leu Glu Cys Val Lys Lys Asn Met  
 85 90 95

Pro Val Glu Glu Thr Ala Trp Ser Cys Cys Pro Lys Asn Trp Lys Ser  
 100 105 110

Phe Ser Ser Asn Cys Tyr Phe Ile Ser Thr Glu Ser Ala Ser Trp Gln

115

120

125

Asp Ser Glu Lys Asp Cys Ala Arg Met Glu Ala His Leu Leu Val Ile  
 130 135 140

Asn Thr Gln Glu Glu Gln Asp Phe Ile Phe Gln Asn Leu Gln Glu Glu  
 145 150 155 160

Ser Ala Tyr Phe Val Gly Leu Ser Asp Pro Glu Gly Gln Arg His Trp  
 165 170 175

Gln Trp Val Asp Gln Thr Pro Tyr Asn Glu Ser Ser Thr Phe Trp His  
 180 185 190

Pro Arg Glu Pro Ser Asp Pro Asn Glu Arg Cys Val Val Leu Asn Phe  
 195 200 205

Arg Lys Ser Pro Lys Arg Trp Gly Trp Asn Asp Val Asn Cys Leu Gly  
 210 215 220

Pro Gln Arg Ser Val Cys Glu Met Met Lys Ile His Leu  
 225 230 235

<210> 53 <211> 32 <212> PRT <213> Homo sapiens <220> <221>  
 MISC\_FEATURE <222> (2)..(2) <223> Xaa is Ile or Leu

<220> <221> MISC\_FEATURE <222> (3)..(3) <223> Xaa can be any amino  
 acid

<220> <221> MISC\_FEATURE <222> (6)..(6) <223> Xaa can be any amino  
 acid

<220> <221> MISC\_FEATURE <222> (8)..(25) <223> Xaa can be any amino  
 acid

<220> <221> MISC\_FEATURE <222> (26)..(26) <223> Xaa is Thr or Asn

<220> <221> MISC\_FEATURE <222> (31)..(31) <223> Xaa is Ile or Val

<220> <221> MISC\_FEATURE <222> (32)..(32) <223> Xaa is Lys or Arg

<400> 53

Glu Xaa Xaa Tyr Ala Xaa Leu Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
 1 5 10 15

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Glu Tyr Ser Glu Xaa Xaa  
 20 25 30

<210> 54 <211> 6 <212> PRT <213> Homo sapiens <220> <221>

MISC\_FEATURE <222> (1)..(1) <223> Xaa is Thr or Asn

<220> <221> MISC\_FEATURE <222> (6)..(6) <223> Xaa is Ile or Val

<400> 54

Xaa Glu Tyr Ser Glu Xaa  
1 5

<210> 56 <211> 626 <212> PRT <213> Homo sapiens <400> 56

Met Ile Phe Leu Thr Ala Leu Pro Leu Phe Trp Ile Met Ile Ser Ala  
1 5 10 15

Ser Arg Gly Gly His Trp Gly Ala Trp Met Pro Ser Ser Ile Ser Ala  
20 25 30

Phe Glu Gly Thr Cys Val Ser Ile Pro Cys Arg Phe Asp Phe Pro Asp  
35 40 45

Glu Leu Arg Pro Ala Val Val His Gly Val Trp Tyr Phe Asn Ser Pro  
50 55 60

Tyr Pro Lys Asn Tyr Pro Pro Val Val Phe Lys Ser Arg Thr Gln Val  
65 70 75 80

Val His Glu Ser Phe Gln Gly Arg Ser Arg Leu Leu Gly Asp Leu Gly  
85 90 95

Leu Arg Asn Cys Thr Leu Leu Leu Ser Asn Val Ser Pro Glu Leu Gly  
100 105 110

Gly Lys Tyr Tyr Phe Arg Gly Asp Leu Gly Gly Tyr Asn Gln Tyr Thr  
115 120 125

Phe Ser Glu His Ser Val Leu Asp Ile Val Asn Thr Pro Asn Ile Val  
130 135 140

Val Pro Pro Glu Val Val Ala Gly Thr Glu Val Glu Val Ser Cys Met  
145 150 155 160

Val Pro Asp Asn Cys Pro Glu Leu Arg Pro Glu Leu Ser Trp Leu Gly  
165 170 175

# REPORT ON THE PROGRESS OF THE WORK

Glu Gly Thr Trp Val Gln Val Ser Leu Leu His Phe Val Pro Thr Arg  
195 200 205

Glu Ala Asn Gly His Arg Leu Gly Cys Gln Ala Ser Phe Pro Asn Thr  
210 215 220

Thr	Leu	Gln	Phe	Glu	Gly	Tyr	Ala	Ser	Met	Asp	Val	Lys	Tyr	Pro	Pro
225					230					235					240

Val Ile Val Glu Met Asn Ser Ser Val Glu Ala Ile Glu Gly Ser His  
245 250 255

Val	Ser	Leu	Leu	Cys	Gly	Ala	Asp	Ser	Asn	Pro	Pro	Pro	Leu	Leu	Thr
			260					265					270		

Trp Met Arg Asp Gly Thr Val Leu Arg Glu Ala Val Ala Glu Ser Leu  
275 280 285

Leu Leu Glu Leu Glu Glu Val Thr Pro Ala Glu Asp Gly Val Tyr Ala  
290 295 300

Cys Leu Ala Glu Asn Ala Tyr Gly Gln Asp Asn Arg Thr Val Gly Leu  
305 310 315 320

Ser Val Met Tyr Ala Pro Trp Lys Pro Thr Val Asn Gly Thr Met Val  
325 330 335

Ala Val Glu Gly Glu Thr Val Ser Ile Leu Cys Ser Thr Gln Ser Asn  
340 345 350

Pro	Asp	Pro	Ile	Leu	Thr	Ile	Phe	Lys	Glu	Lys	Gln	Ile	Leu	Ser	Thr
		355					360					365			

Val Ile Tyr Glu Ser Glu Leu Gln Leu Glu Leu Pro Ala Val Ser Pro  
370 375 380

Glu Asp Asp Gly Glu Tyr Trp Cys Val Ala Glu Asn Gln Tyr Gly Gln  
385 390 395 400

Arg Ala Thr Ala Phe Asn Leu Ser Val Glu Phe Ala Pro Val Leu Leu  
405 410 415

Leu Glu Ser His Cys Ala Ala Ala Arg Asp Thr Val Gln Cys Leu Cys  
 420 425 430

Val Val Lys Ser Asn Pro Glu Pro Ser Val Ala Phe Glu Leu Pro Ser  
 435 440 445

Arg Asn Val Thr Val Asn Glu Ser Glu Arg Glu Phe Val Tyr Ser Glu  
 450 455 460

Arg Ser Gly Leu Val Leu Thr Ser Ile Leu Thr Leu Arg Gly Gln Ala  
 465 470 475 480

Gln Ala Pro Pro Arg Val Ile Cys Thr Ala Arg Asn Leu Tyr Gly Ala  
 485 490 495

Lys Ser Leu Glu Leu Pro Phe Gln Gly Ala His Arg Leu Met Trp Ala  
 500 505 510

Lys Ile Gly Pro Val Gly Ala Val Val Ala Phe Ala Ile Leu Ile Ala  
 515 520 525

Ile Val Cys Tyr Ile Thr Gln Thr Arg Arg Lys Lys Asn Val Thr Glu  
 530 535 540

Ser Pro Ser Phe Ser Ala Gly Asp Asn Pro Pro Val Leu Phe Ser Ser  
 545 550 555 560

Asp Phe Arg Ile Ser Gly Ala Pro Glu Lys Tyr Glu Ser Glu Arg Arg  
 565 570 575

Leu Gly Ser Glu Arg Arg Leu Leu Gly Leu Arg Gly Glu Pro Pro Glu  
 580 585 590

Leu Asp Leu Ser Tyr Ser His Ser Asp Leu Gly Lys Arg Pro Thr Lys  
 595 600 605

Asp Ser Tyr Thr Leu Thr Glu Glu Leu Ala Glu Tyr Ala Glu Ile Arg  
 610 615 620

Val Lys  
 625

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Met Ala Leu Leu Ala Glu His Leu Leu Lys Pro Leu Pro Ala Asp Lys  
1 5 10 15

Gln Ile Glu Thr Gly Pro Phe Leu Glu Ala Val Ser His Leu Pro Pro  
20 25 30

Phe Phe Asp Cys Leu Gly Ser Pro Val Phe Thr Pro Ile Lys Ala Asp  
35 40 45

Ile Ser Gly Asn Ile Thr Lys Ile Lys Ala Val Tyr Asp Thr Asn Pro  
50 55 60

Ala Lys Phe Arg Thr Leu Gln Asn Ile Leu Glu Val Glu Lys Glu Met  
65 70 75 80

Tyr Gly Ala Glu Trp Pro Lys Val Gly Ala Thr Leu Ala Leu Met Trp  
85 90 95

Leu Lys Arg Gly Leu Arg Phe Ile Gln Val Phe Leu Gln Ser Ile Cys  
100 105 110

Asp Gly Glu Arg Asp Glu Asn His Pro Asn Leu Ile Arg Val Asn Ala  
115 120 125

Thr Lys Ala Tyr Glu Met Ala Leu Lys Lys Tyr His Gly Trp Ile Val  
130 135 140

Gln Lys Ile Phe Gln Ala Ala Leu Tyr Ala Ala Pro Tyr Lys Ser Asp  
145 150 155 160

Phe Leu Lys Ala Leu Ser Lys Gly Gln Asn Val Thr Glu Glu Glu Cys  
165 170 175

Leu Glu Lys Ile Arg Leu Phe Leu Val Asn Tyr Thr Ala Thr Ile Asn  
180 185 190

Val Ile Tyr Glu Met Tyr Thr Gln Met Asn Ala Glu Leu Asn Tyr Ly  
195 200 205

Val

<210> 64 <211> 276 <212> PRT <213> Homo sapiens <400> 64

Met Gly Asn Ser Met Lys Ser Thr Pro Ala Pro Ala Glu Arg Pro Leu  
1 5 10 15

Pro Asn Pro Glu Gly Leu Asp Ser Asp Phe Leu Ala Val Leu Ser Asp  
20 25 30

Tyr Pro Ser Pro Asp Ile Ser Pro Pro Ile Phe Arg Arg Gly Glu Lys  
35 40 45

Leu Arg Val Ile Ser Asp Glu Gly Gly Trp Trp Lys Ala Ile Ser Leu  
50 55 60

Ser Thr Gly Arg Glu Ser Tyr Ile Pro Gly Ile Cys Val Ala Arg Val  
65 70 75 80

Tyr His Gly Trp Leu Phe Glu Gly Leu Gly Arg Asp Lys Ala Glu Glu  
85 90 95

Leu Leu Gln Leu Pro Asp Thr Lys Val Gly Ser Phe Met Ile Arg Glu  
100 105 110

Ser Glu Thr Lys Lys Gly Phe Tyr Ser Leu Ser Val Arg His Arg Gln  
115 120 125

Val Lys His Tyr Arg Ile Phe Arg Leu Pro Asn Asn Trp Tyr Tyr Ile  
130 135 140

Ser Pro Arg Leu Thr Phe Gln Cys Leu Glu Asp Leu Val Asn His Tyr  
145 150 155 160

Ser Glu Val Ala Asp Gly Leu Cys Cys Val Leu Thr Thr Pro Cys Leu  
165 170 175

Thr Gln Ser Thr Ala Ala Pro Ala Val Arg Ala Ser Ser Ser Pro Val  
180 185 190

Thr Leu Arg Gln Lys Thr Val Asp Trp Arg Arg Val Ser Arg Leu Gln  
195 200 205

Glu Asp Pro Glu Gly Thr Glu Asn Pro Leu Gly Val Asp Glu Ser Leu  
210 215 220

Phe Ser Tyr Gly Leu Arg Glu Ser Ile Ala Ser Tyr Leu Ser Leu Thr  
225 230 235 240



Ser Glu Asp Asn Thr Ser Phe Asp Arg Lys Lys Lys Ser Ile Ser Leu  
245 250 255

Met Tyr Gly Gly Ser Lys Arg Lys Ser Ser Phe Phe Ser Ser Pro Pro  
260 265 270

Tyr Phe Glu Asp  
275

<210> 65 <211> 18 <212> PRT <213> Homo sapiens <400> 65

Lys Arg Phe Lys Gln Asp Gly Gly Trp Ser His Trp Ser Pro Trp Ser  
1 5 10 15

Ser Cys

<210> 66 <211> 18 <212> PRT <213> Homo sapiens <400> 66

Lys Arg Ala Lys Ala Ala Gly Gly Trp Ser His Trp Ser Pro Trp Ser  
1 5 10 15

Ser Cys

<210> 67 <211> 1784 <212> DNA <213> Staphylococcus aureus <220>  
<221> CDS <222> (184)..(1635) <223>

<400> 67  
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gtattgcâat acataattcg ttatattatg atgactatac aaatacatatc aggggggtatt 180  
aat ttg aaa aag aaa aac att tat tca att cgt aaa cta ggt gta ggt 228  
Leu Lys Lys Lys Asn Ile Tyr Ser Ile Arg Lys Leu Gly Val Gly  
1 5 10 15  
att gca tct gta act tta ggt aca tta ctt ata tct ggt ggc gta aca 276  
Ile Ala Ser Val Thr Leu Gly Thr Leu Leu Ile Ser Gly Gly Val Thr  
20 25 30  
cct gct gca aat gct gcg caa cac gat gaa gct caa caa aat gct ttt 324  
Pro Ala Ala Asn Ala Ala Gln His Asp Glu Ala Gln Gln Asn Ala Phe  
35 40 45  
tat caa gtc tta aat atg cct aac tta aat gct gat caa cgc aat ggt 372  
Tyr Gln Val Leu Asn Met Pro Asn Leu Asn Ala Asp Gln Arg Asn Gly  
50 55 60  
ttt atc caa agc ctt aaa gat gat cca agc caa agt gct aac gtt tta 420  
Phe Ile Gln Ser Leu Lys Asp Asp Pro Ser Gln Ser Ala Asn Val Leu

65	70	75	
ggt gaa gct caa aaa ctt aat gac tct caa gct cca aaa gct gat gcg Gly Glu Ala Gln Lys Leu Asn Asp Ser Gln Ala Pro Lys Ala Asp Ala 80 85 90 95			468
caa caa aat aac ttc gac aaa gat caa caa agc gcc ttc tat gaa atc Gln Gln Asn Asn Phe Asp Lys Asp Gln Gln Ser Ala Phe Tyr Glu Ile 100 105 110			516
ttg aac atg cct aac tta aac gaa gcg caa cgt aac ggc ttc att caa Leu Asn Met Pro Asn Leu Asn Glu Ala Gln Arg Asn Gly Phe Ile Gln 115 120 125			564
agt ctt aaa gac gac cca agc caa agc act aac gtt tta ggt gaa gct Ser Leu Lys Asp Asp Pro Ser Gln Ser Thr Asn Val Leu Gly Glu Ala 130 135 140			612
aaa aaa tta aac gaa tct caa gca ccg aaa gct gat aac aat ttc aac Lys Lys Leu Asn Glu Ser Gln Ala Pro Lys Ala Asp Asn Asn Phe Asn 145 150 155			660
aaa gaa caa caa aat gct ttc tat gaa atc ttg aat atg cct aac tta Lys Glu Gln Gln Asn Ala Phe Tyr Glu Ile Leu Asn Met Pro Asn Leu 160 165 170 175			708
aac gaa gaa caa cgc aat ggt ttc atc caa agc tta aaa gat gac cca Asn Glu Glu Gln Arg Asn Gly Phe Ile Gln Ser Leu Lys Asp Asp Pro 180 185 190			756
agc caa agt gct aac cta ttg tca gaa gct aaa aag tta aat gaa tct Ser Gln Ser Ala Asn Leu Leu Ser Glu Ala Lys Lys Leu Asn Glu Ser 195 200 205			804
caa gca ccg aaa gcg gat aac aaa ttc aac aaa gaa caa caa aat gct Gln Ala Pro Lys Ala Asp Asn Lys Phe Asn Lys Glu Gln Gln Asn Ala 210 215 220			852
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ggt ttc atc caa agc cta aaa gat gac cca agc caa agc gct aac ctt Gly Phe Ile Gln Ser Leu Lys Asp Asp Pro Ser Gln Ser Ala Asn Leu 240 245 250 255			948
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 65 70 75 80  
 Glu Ala Gln Lys Leu Asn Asp Ser Gln Ala Pro Lys Ala Asp Ala Gln  
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 Gln Asn Asn Phe Asp Lys Asp Gln Gln Ser Ala Phe Tyr Glu Ile Leu  
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 Glu Gln Gln Asn Ala Phe Tyr Glu Ile Leu Asn Met Pro Asn Leu Asn  
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 Glu Glu Gln Arg Asn Gly Phe Ile Gln Ser Leu Lys Asp Asp Pro Ser  
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 Ala Pro Lys Ala Asp Asn Lys Phe Asn Lys Glu Gln Gln Asn Ala Phe  
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 Tyr Glu Ile Leu His Leu Pro Asn Leu Asn Glu Glu Gln Arg Asn Gly  
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 Phe Ile Gln Ser Leu Lys Asp Asp Pro Ser Gln Ser Ala Asn Leu Leu  
 245 250 255  
 Ala Glu Ala Lys Lys Leu Asn Asp Ala Gln Ala Pro Lys Ala Asp Asn  
 260 265 270

Lys Phe Asn Lys Glu Gln Gln Asn Ala Phe Tyr Glu Ile Leu His Leu  
275 280 285

Pro Asn Leu Thr Glu Glu Gln Arg Asn Gly Phe Ile Gln Ser Leu Lys  
290 295 300

Asp Asp Pro Ser Val Ser Lys Glu Ile Leu Ala Glu Ala Lys Lys Leu  
305 310 315 320

Asn Asp Ala Gln Ala Pro Lys Glu Glu Asp Asn Asn Lys Pro Gly Lys  
325 330 335

Glu Asp Asn Asn Lys Pro Gly Lys Glu Asp Asn Asn Lys Pro Gly Lys  
340 345 350

Glu Asp Asn Asn Lys Pro Gly Lys Glu Asp Asn Asn Lys Pro Gly Lys  
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370 375 380

Glu Asp Asn Lys Lys Pro Gly Lys Glu Asp Gly Asn Lys Pro Gly Lys  
385 390 395 400

Glu Asp Asn Lys Lys Pro Gly Lys Glu Asp Gly Asn Lys Pro Gly Lys  
405 410 415

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420 425 430

Val Lys Leu Gly Asp Thr Val Asn Asp Ile Ala Lys Ala Asn Gly Thr  
435 440 445

Thr Ala Asp Lys Ile Ala Ala Asp Asn Lys Leu Ala Asp Lys Asn Met  
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SECRET

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			20					25					30		
Trp	Val	Lys	Trp	Met	Arg	Gly	Glu	Gln	Glu	Gln	Gln	Gly	Thr	Gln	Pro
		35					40					45			
Gly	Asp	Ile	Leu	Pro	Asn	Ala	Asp	Glu	Thr	Trp	Tyr	Leu	Arg	Ala	Thr
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Leu	Asp	Val	Val	Ala	Gly	Glu	Ala	Ala	Gly	Leu	Ser	Cys	Arg	Val	Lys
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His	Ser	Ser	Leu	Glu	Gly	Gln	Asp	Ile	Val	Leu	Tyr	Trp			
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Leu Leu Leu Leu Leu Val His Ala Ser Pro Ala Pro Pro Glu Pro Cys	
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Glu Leu Asp Glu Glu Ser Cys Ser Cys Asn Phe Ser Asp Pro Lys Pro	
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Asp Trp Ser Ser Ala Phe Asn Cys Leu Gly Ala Ala Asp Val Glu Leu	
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Tyr Gly Gly Gly Arg Ser Leu Glu Tyr Leu Leu Lys Arg Val Asp Thr	
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Glu Ala Asp Leu Gly Gln Phe Thr Asp Ile Ile Lys Ser Leu Ser Leu	
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Lys Arg Leu Thr Val Arg Ala Ala Arg Ile Pro Ser Arg Ile Leu Phe	
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gga gcc ctg cgt gtg ctc ggg att tcc ggc ctc cag gaa ctg act ctt	626
Gly Ala Leu Arg Val Leu Gly Ile Ser Gly Leu Gln Glu Leu Thr Leu	
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Glu Asn Leu Glu Val Thr Gly Thr Ala Pro Pro Pro Leu Leu Glu Ala	
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acc gga ccc gat ctc aac atc ttg aac ctc cgc aac gtg tgg tgg gca	722
Thr Gly Pro Asp Leu Asn Ile Leu Asn Leu Arg Asn Val Ser Trp Ala	
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aca agg gat gcc tgg ctc gca gaa ctg cag cag tgg cta aag cct gga	770
Thr Arg Asp Ala Trp Leu Ala Glu Leu Gln Gln Trp Leu Lys Pro Gly	
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ctc aag gta ctg agt att gcc caa gca cac tca ctc aac ttt tcc tgc	818
Leu Lys Val Leu Ser Ile Ala Gln Ala His Ser Leu Asn Phe Ser Cys	
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[illegible]



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1873

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35 40 45

Gly Ala Ala Asp Val Glu Leu Tyr Gly Gly Gly Arg Ser Leu Glu Tyr  
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Leu Leu Lys Arg Val Asp Thr Glu Ala Asp Leu Gly Gln Phe Thr Asp  
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Ile Ile Lys Ser Leu Ser Leu Lys Arg Leu Thr Val Arg Ala Ala Arg  
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Ile Pro Ser Arg Ile Leu Phe Gly Ala Leu Arg Val Leu Gly Ile Ser  
100 105 110

Gly Leu Gln Glu Leu Thr Leu Glu Asn Leu Glu Val Thr Gly Thr Ala  
115 120 125

Pro Pro Pro Leu Leu Glu Ala Thr Gly Pro Asp Leu Asn Ile Leu Asn  
130 135 140

Leu Arg Asn Val Ser Trp Ala Thr Arg Asp Ala Trp Leu Ala Glu Leu  
145 150 155 160

Gln Gln Trp Leu Lys Pro Gly Leu Lys Val Leu Ser Ile Ala Gln Ala  
165 170 175

His Ser Leu Asn Phe Ser Cys Glu Gln Val Arg Val Phe Pro Ala Leu  
180 185 190

Ser Thr Leu Asp Leu Ser Asp Asn Pro Glu Leu Gly Glu Arg Gly Leu  
195 200 205

Ile Ser Ala Leu Cys Pro Leu Lys Phe Pro Thr Leu Gln Val Leu Ala  
210 215 220

Leu Arg Asn Ala Gly Met Glu Thr Pro Ser Gly Val Cys Ser Ala Leu  
225 230 235 240

Ala Ala Ala Arg Val Gln Leu Gln Gly Leu Asp Leu Ser His Asn Ser  
245 250 255

Leu Arg Asp Ala Ala Gly Ala Pro Ser Cys Asp Trp Pro Ser Gln Leu  
260 265 270

Asn Ser Leu Asn Leu Ser Phe Thr Gly Leu Lys Gln Val Pro Lys Gly  
275 280 285

Leu Pro Ala Lys Leu Ser Val Leu Asp Leu Ser Tyr Asn Arg Leu Asp  
290 295 300

Arg Asn Pro Ser Pro Asp Glu Leu Pro Gln Val Gly Asn Leu Ser Leu  
305 310 315 320

Lys Gly Asn Pro Phe Leu Asp Ser Glu Ser His Ser Glu Lys Phe Asn  
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35 40 45

Ser Arg Thr Glu Ala Ala Asp Leu Cys Gln Ala Phe Asn Ser Thr Leu  
50 55 60

Pro Thr Met Asp Gln Met Lys Leu Ala Leu Ser Lys Gly Phe Glu Thr  
65 70 75 80

Cys Arg Tyr Gly Phe Ile Glu Gly Asn Val Val Ile Pro Arg Ile His

85

90

95

Pro Asn Ala Ile Cys Ala Ala Asn His Thr Gly Val Tyr Ile Leu Val  
100 105 110

Thr Ser Asn Thr Ser His Tyr Asp Thr Tyr Cys Phe Asn Ala Ser Ala  
115 120 125

Pro Pro Glu Glu Asp Cys Thr Ser Val Thr Asp Leu Pro Asn Ser Phe  
130 135 140

Asp Gly Pro Val Thr Ile Thr Ile Val Asn Arg Asp Gly Thr Arg Tyr  
145 150 155 160

Ser Lys Lys Gly Glu Tyr Arg Thr His Gln Glu Asp Ile Asp Ala Ser  
165 170 175

Asn Ile Ile Asp Asp Asp Val Ser Ser Gly Ser Thr Ile Glu Lys Ser  
180 185 190

Thr Pro Glu Ser Tyr Ile Leu His Thr Tyr Leu Pro Thr Glu Gln Pro  
195 200 205

Thr Gly Asp Gln Asp Asp Ser Phe Phe Ile Arg Ser Thr Leu Ala Thr  
210 215 220

Arg Asp Arg Asp Ser Ser Lys Asp Ser Arg Gly Ser Ser Arg Thr Val  
225 230 235 240

Thr His Gly Ser Glu Leu Ala Gly His Ser Ser Ala Asn Gln Asp Ser  
245 250 255

Gly Val Thr Thr Thr Ser Gly Pro Met Arg Arg Pro Gln Ile Pro Glu  
260 265 270

Trp Leu Ile Ile Leu Ala Ser Leu Leu Ala Leu Ala Leu Ile Leu Ala  
275 280 285

Val Cys Ile Ala Val Asn Ser Arg Arg Arg Cys Gly Gln Lys Lys Lys  
290 295 300

Leu Val Ile Asn Gly Gly Asn Gly Thr Val Glu Asp Arg Lys Pro Ser  
305 310 315 320

Glu Leu Asn Gly Glu Ala Ser Lys Ser Gln Glu Met Val His Leu Val

Pro Val Val His Leu Asn Pro Leu His Ser Leu Gln Val Phe Glu Ile  
180 185 190

Arg Ser Glu Lys Arg Trp Gln Asp Ile Ser Met Met Arg Met Lys Thr  
195 200 205

Ile Gly Glu His Ile Leu Ala His Ile Gln His Glu Val Asp Phe Leu  
210 215 220

Phe Cys Met Asp Val Asp Gln Val Phe Gln Asp Asn Phe Gly Val Glu  
225 230 235 240

Thr Leu Gly Gln Leu Val Ala Gln Leu Gln Ala Trp Trp Tyr Lys Ala  
245 250 255

Ser Pro Glu Lys Phe Thr Tyr Glu Arg Arg Glu Leu Ser Ala Ala Tyr  
260 265 270

Ile Pro Phe Gly Glu Gly Asp Phe Tyr Tyr His Ala Ala Ile Phe Gly  
275 280 285

Gly Thr Pro Thr His Ile Leu Asn Leu Thr Arg Glu Cys Phe Lys Gly  
290 295 300

Ile Leu Gln Asp Lys Lys His Asp Ile Glu Ala Gln Trp His Asp Glu  
305 310 315 320

Ser His Leu Asn Lys Tyr Phe Leu Phe Asn Lys Pro Thr Lys Ile Leu  
325 330 335

Ser Pro Glu Tyr Cys Trp Asp Tyr Gln Ile Gly Leu Pro Ser Asp Ile  
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Met Ser Glu Asn  
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Ile Pro Leu Arg Val Gln Phe Lys Arg Met Lys Ala Ala Glu Trp Ala  
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Thr Gly Phe Ala Arg Ala Gly Asp Gly His Asn Arg Phe Ser Asp Leu  
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Gly Tyr Ile Ser Pro Leu Asp Tyr Asn Leu Leu Thr Asn Lys Pro Asn  
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att gat gga tta gcg aca aaa gtc gag acc gct cag aaa cta caa caa 357  
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Lys Phe Lys Pro Ala Ala Thr Val Ala Tyr Ser Ser Ser Thr Gly Gly  
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gcg gtc aat att gac ttg tcg tct acc aga ggt gct ggt gtt gtt gtc 549  
Ala Val Asn Ile Asp Leu Ser Ser Thr Arg Gly Ala Gly Val Val Val  
135 140 145

tat tct gac aat gat acc agt gat ggg ccg tta atg agc ttg cgg acg 597  
Tyr Ser Asp Asn Asp Thr Ser Asp Gly Pro Leu Met Ser Leu Arg Thr

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Gly Lys Glu Thr Phe Asn Gln Ser Ala Leu Phe Val Asp Tyr Lys Gly			
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Thr Thr Asn Ala Val Asn Ile Ala Met Arg His Ala Thr Thr Pro Asn			
	185	190	195
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Phe Ser Ser Ala Leu Asn Ile Thr Ser Gly Asn Glu Asn Gly Ser Ala			
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His Glu Asn Pro Ser Ile Gly Ala Asp Tyr Asp Lys Asn Ala Ala Arg			
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tat cca ttg ata ttg tca aaa aga caa aac ggt gca gga aca gcc gct			885
Tyr Pro Leu Ile Leu Ser Lys Arg Gln Asn Gly Ala Gly Thr Ala Ala			
	245	250	255
cag gga atc tac att aac tca acc tca ggc acg aca ggg aag ttg ctt			933
Gln Gly Ile Tyr Ile Asn Ser Thr Ser Gly Thr Thr Gly Lys Leu Leu			
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agg att aga aac ctt agt gat gat aag ttc tac gtc aag tct gac ggt			981
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Gly Phe Tyr Ala Lys Glu Thr Ser Gln Ile Asp Gly Asn Leu Lys Leu			
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Lys Asp Pro Thr Ala Asn Asp His Ala Ala Thr Lys Ala Tyr Val Asp			
	310	315	320
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Lys Ala Ile Ser Glu Leu Lys Lys Leu Ile Leu Lys Lys			
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Asn Lys Pro Asn Ile Asp Gly Leu Ala Thr Lys Val Glu Thr Ala Gln  
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Lys Leu Gln Gln Lys Ala Asp Lys Glu Thr Val Tyr Thr Lys Ala Glu  
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Ser Lys Gln Glu Leu Asp Lys Lys Leu Asn Leu Lys Gly Gly Val Met  
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Thr Gly Gln Leu Lys Phe Lys Pro Ala Ala Thr Val Ala Tyr Ser Ser  
115 120 125

Ser Thr Gly Gly Ala Val Asn Ile Asp Leu Ser Ser Thr Arg Gly Ala  
130 135 140

Gly Val Val Val Tyr Ser Asp Asn Asp Thr Ser Asp Gly Pro Leu Met  
145 150 155 160

Ser Leu Arg Thr Gly Lys Glu Thr Phe Asn Gln Ser Ala Leu Phe Val  
165 170 175

Asp Tyr Lys Gly Thr Thr Asn Ala Val Asn Ile Ala Met Arg His Ala  
180 185 190

Thr Thr Pro Asn Phe Ser Ser Ala Leu Asn Ile Thr Ser Gly Asn Glu  
195 200 205

Asn Gly Ser Ala Met Gln Leu Arg Gly Ser Glu Lys Ala Leu Gly Thr  
210 215 220

Leu Lys Ile Thr His Glu Asn Pro Ser Ile Gly Ala Asp Tyr Asp Lys  
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245 250 255

Gly Thr Ala Ala Gln Gly Ile Tyr Ile Asn Ser Thr Ser Gly Thr Thr  
260 265 270



Gly Lys Leu Leu Arg Ile Arg Asn Leu Ser Asp Asp Lys Phe Tyr Val  
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Lys Ser Asp Gly Gly Phe Tyr Ala Lys Glu Thr Ser Gln Ile Asp Gly  
 290 295 300

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 Ala Gly Tyr Val Asn Gly Lys Arg Lys Tyr Ile Arg Arg Glu Gly Phe  
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 Lys Thr Lys Gln Ala Ala Arg Glu Thr Leu Ile Ser Leu Gln Ala Glu  
 40 45 50  
 ctt gat aaa cct aaa tca agt atg aca ttt gga gca ttg aca gat caa 489  
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Arg Glu Gly Phe Lys Thr Lys Gln Ala Ala Arg Glu Thr Leu Ile Ser  
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Thr Tyr Leu Lys Thr Glu Arg Asn Ile Asn Lys His Ile Leu Pro Lys  
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Asn Asn Asn Pro Ala Leu Pro Ile Thr Pro Pro Lys Ile Lys Arg Lys  
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Arg Lys Met Asn Asn Asn Phe Tyr Thr Leu Asp Gln Leu Lys Gln Phe  
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Leu Glu Leu Val Glu Lys Thr Asp Asn Ile Glu Lys Ile Ala Leu Phe  
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Arg Leu Leu Ala Phe Thr Gly Ile Arg Lys Gly Glu Leu Leu Ala Leu  
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Thr Trp Asp Asp Leu Asn Gly Asn Thr Leu Ser Ile Asn Lys Ala Val  
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Thr Arg Thr Gln Val Gly Leu Glu Ile Asp Val Thr Lys Thr Lys Ser  
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Ser Asp Arg Leu Ile Ser Leu Asp Asp Glu Thr Leu Glu Ile Leu Gln  
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Glu Leu His Glu Thr Phe Pro Thr Ser Thr Leu Met Phe Gln Ser Lys  
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Ser Gly Gly Ile Met Thr Pro Ser Leu Pro Arg Lys Trp Leu Leu Gln  
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Ile Ile Lys Gly Ile Asp Leu Pro Gln Ile Thr Ile His Gly Phe Arg  
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His Thr His Ala Ser Leu Leu Phe Glu Ser Gly Leu Ser Leu Lys Gln  
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Val Gln His Arg Leu Gly His Gly Asp Leu Gln Thr Thr Met Asn Val  
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Lys Ala Glu Ser Lys Lys Asp Asp Thr Asp Leu Lys Leu Val Ser His  
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Glu Lys Ile Gln His Val Phe Lys Ser Gly Cys Gly Phe Asp Asn Asp  
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Ser Asn Lys Gly Phe Val Tyr Thr Lys Ile Glu Lys Asn Gly Lys Asn  
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Val His Val Ile Gly Thr His Thr Gln Ser Glu Asp Ser Arg Cys Gly  
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Ala Gly His Asp Arg Lys Ile Arg Ala Glu Gln Met Lys Glu Ile Ser  
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Gln Pro Lys Gln Leu Val Asn Glu Val Val Thr Glu Lys Pro Lys Pro  
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Val Gln Tyr Glu Glu Tyr Lys Lys Leu Tyr Gln Lys Tyr Lys Glu Glu	
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Tyr Asn Glu Leu Thr Glu Ser Leu Lys Ser Ala Val Lys Asp Phe Glu  
145 150 155 160

Lys Asp Val Glu Lys Ile Glu Asn Gln His His Asp Leu Lys Pro Phe  
165 170 175

Thr Asp Glu Met Glu Glu Lys Ala Thr Ser Arg Val Asp Asp Leu Ala  
180 185 190

Asn Lys Ala Tyr Ser Val Tyr Phe Ala Phe Val Arg Asp Thr Gln His  
195 200 205

Lys Thr Glu Ala Leu Glu Leu Lys Ala Lys Val Asp Leu Val Leu Gly  
210 215 220

Asp Glu Asp Lys Pro His Arg Ile Ser Asn Glu Arg Ile Glu Lys Glu  
225 230 235 240

Met Ile Lys Asp Leu Glu Ser Ile Ile Glu Asp Phe Phe Ile Glu Thr  
245 250 255

Gly Leu Asn Lys Pro Gly Asn Ile Thr Ser Tyr Asp Ser Ser Lys His  
260 265 270

His Tyr Lys Asn His Ser Glu Gly Phe Glu Ala Leu Val Lys Glu Thr  
275 280 285

Arg Glu Ala Val Ala Asn Ala Asp Glu Ser Trp Lys Thr Lys Thr Val  
290 295 300

Lys Lys Tyr Gly Glu Ser Glu Thr Lys Ser Pro Val Val Lys Glu Glu  
305 310 315 320

Asn Lys Val Glu Asp Pro Gln Ser Pro Lys Phe Asp Asn Gln Gln Glu  
325 330 335

Val Lys Thr Thr Ala Gly Lys Ala Glu Glu Thr Thr Gln Pro Val Ala  
340 345 350

Gln Pro Leu Val Lys Ile Pro Gln Gly Thr Ile Thr Gly Glu Ile Val  
355 360 365

Lys Gly Pro Glu Tyr Pro Thr Met Glu Asn Lys Thr Leu Gln Gly Glu  
370 375 380



Ile Val Gln Gly Pro Asp Phe Pro Thr Met Glu Gln Ser Gly Pro Ser  
385 390 395 400

Leu Ser Asp Asn Tyr Thr Gln Pro Thr Thr Pro Asn Pro Ile Leu Glu  
405 410 415

Gly Leu Glu Gly Ser Ser Ser Lys Leu Glu Ile Lys Pro Gln Gly Thr  
420 425 430

Glu Ser Thr Leu Lys Gly Ile Gln Gly Glu Ser Ser Asp Ile Glu Val  
435 440 445

Lys Pro Gln Ala Thr Glu Thr Thr Glu Ala Ser Gln Tyr Gly Pro Arg  
450 455 460

Pro Gln Phe Asn Lys Thr Pro Lys Tyr Val Lys Tyr Arg Asp Ala Gly  
465 470 475 480

Thr Gly Ile Arg Glu Tyr Asn Asp Gly Thr Phe Gly Tyr Glu Ala Arg  
485 490 495

Pro Arg Phe Asn Lys Pro Ser Glu Thr Asn Ala Tyr Asn Val Thr Thr  
500 505 510

Asn Gln Asp Gly Thr Val Ser Tyr Gly Ala Arg Pro Thr Gln Asn Lys  
515 520 525

Ala Ser Glu Thr Asn Ala Tyr Asn Val Thr Thr His Ala Asn Gly Gln  
530 535 540

Val Ser Tyr Gly Ala Arg Pro Thr Gln Lys Lys Pro Ser Glu Thr Asn  
545 550 555 560

Ala Tyr Asn Val Thr Thr His Ala Asn Gly Gln Val Ser Tyr Gly Ala  
565 570 575

Arg Pro Thr Tyr Asn Lys Pro Ser Glu Thr Asn Ala Tyr Asn Val Thr  
580 585 590

Thr His Gly Asn Gly Gln Val Ser Tyr Gly Ala Arg Pro Thr Tyr Lys  
595 600 605

Lys Pro Ser Lys Thr Asn Ala Tyr Asn Val Thr Thr His Ala Asn Gly  
610 615 620

Gln Val Ser Tyr Gly Ala Arg Pro Thr Gln Asn Lys Pro Ser Glu Thr  
625 630 635 640

Asn Ala Tyr Asn Val Thr Thr His Ala Asn Gly Gln Val Ser Tyr Gly  
645 650 655

Ala Arg Pro Thr Gln Asn Lys Pro Ser Glu Thr Asn Ala Tyr Asn Val  
660 665 670

Thr Thr His Gly Asn Gly Gln Val Ser Tyr Gly Ala Arg Pro Thr Tyr  
675 680 685

Asn Lys Pro Ser Lys Thr Asn Ala Tyr Asn Val Thr Thr His Ala Asp  
690 695 700

Gly Thr Ala Thr Tyr Gly Pro Arg Val Thr Lys  
705 710 715

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aagcaaggct atctaataaa agaacggctc aactgaagat gaaagaaaaa ttttaattca 180  
tatgaatgac ggcgagcaag accatgctga acaattatta gctcaagtga atcaattatt 240  
ggcagataaa aatcatttac atcttgtttt tgaataatat ctctattacg caagtgtgct 300  
gtattctaaa gtgccattgt gttttctatt ttttaataaa acctcagcac attatgaaca 360  
actttctatt ttctatatct cttaaaacca tttccgaaat taaacctcag cacattcaaa 420  
attccatttt attcttaaaa atatttttta actcatatgt aataaacggc tticattata 480  
aaaaatatct atatatttta tctgttttta ttaatcgga tagcgtgatt ttgcggtttt 540  
aagcctttta ctccctgaat aaatctttgg acaaaatttt tattttataa gttgtaaaac 600  
ttacctttta atttaattat aaatatagat ttagtattg caatacataa ttcggtatat 660  
tatgatgact ttacaaatac atacaggggg tattaat ttg aaa aag aaa aac att 715  
Leu Lys Lys Lys Asn Ile  
1 5  
tat tca att cgt aaa cta ggt gta ggt att gca tct gta act tta ggt 763  
Tyr Ser Ile Arg Lys Leu Gly Val Gly Ile Ala Ser Val Thr Leu Gly  
10 15 20  
aca tta ctt ata tct ggt ggc gta aca cct gct gca aat gct gcg caa 811  
Thr Leu Leu Ile Ser Gly Gly Val Thr Pro Ala Ala Asn Ala Ala Gln

25	30	35	
cac gat gaa gct caa caa aat gct ttt tat caa gtg tta aat atg cct His Asp Glu Ala Gln Gln Asn Ala Phe Tyr Gln Val Leu Asn Met Pro 40 45 50			859
aac tta aac gct gat caa cgt aat ggt ttt atc caa agc ctt aaa gat Asn Leu Asn Ala Asp Gln Arg Asn Gly Phe Ile Gln Ser Leu Lys Asp 55 60 65 70			907
gat cca agc caa agt gct aac gtt tta ggt gaa gct caa aaa ctt aat Asp Pro Ser Gln Ser Ala Asn Val Leu Gly Glu Ala Gln Lys Leu Asn 75 80 85			955
gac tct caa gct cca aaa gct gat gcg caa caa aat aag ttc aac aaa Asp Ser Gln Ala Pro Lys Ala Asp Ala Gln Gln Asn Lys Phe Asn Lys 90 95 100			1003
gat caa caa agc gcc ttc tat gaa atc ttg aac atg cct aac tta aac Asp Gln Gln Ser Ala Phe Tyr Glu Ile Leu Asn Met Pro Asn Leu Asn 105 110 115			1051
gaa gag caa cgc aat ggt ttc att caa agt ctt aaa gac gat cca agc Glu Glu Gln Arg Asn Gly Phe Ile Gln Ser Leu Lys Asp Asp Pro Ser 120 125 130			1099
caa agc act aac gtt tta ggt gaa gct aaa aaa tta aac gaa tct caa Gln Ser Thr Asn Val Leu Gly Glu Ala Lys Lys Leu Asn Glu Ser Gln 135 140 145 150			1147
gca ccg aaa gct gac aac aat ttc aac aaa gaa caa caa aat gct ttc Ala Pro Lys Ala Asp Asn Asn Phe Asn Lys Glu Gln Gln Asn Ala Phe 155 160 165			1195
tat gaa atc ttg aac atg cct aac ttg aac gaa gaa caa cgc aat ggt Tyr Glu Ile Leu Asn Met Pro Asn Leu Asn Glu Glu Gln Arg Asn Gly 170 175 180			1243
ttc atc caa agc tta aaa gat gac cca agt caa agt gct aac ctt tta Phe Ile Gln Ser Leu Lys Asp Asp Pro Ser Gln Ser Ala Asn Leu Leu 185 190 195			1291
gca gaa gct aaa aag tta aat gaa tct caa gca ccg aaa gct gat aac Ala Glu Ala Lys Lys Leu Asn Glu Ser Gln Ala Pro Lys Ala Asp Asn 200 205 210			1339
aaa ttc aac aaa gaa caa caa aat gct ttc tat gaa atc tta cat tta Lys Phe Asn Lys Glu Gln Gln Asn Ala Phe Tyr Glu Ile Leu His Leu 215 220 225 230			1387
cct aac tta aat gaa gaa caa cgc aat ggt ttc atc caa agc tta aaa Pro Asn Leu Asn Glu Glu Gln Arg Asn Gly Phe Ile Gln Ser Leu Lys 235 240 245			1435
gat gac cca agc caa agc gct aac ctt tta gca gaa gct aaa aag cta Asp Asp Pro Ser Gln Ser Ala Asn Leu Leu Ala Glu Ala Lys Lys Leu 250 255 260			1483
aat gat gca caa gca cca aaa gct gac aac aaa ttc aac aaa gaa caa Asn Asp Ala Gln Ala Pro Lys Ala Asp Asn Lys Phe Asn Lys Glu Gln			1531

265	270	275	
caa aat gct ttc tat gaa att tta cat tta cct aac tta act gaa gaa Gln Asn Ala Phe Tyr Glu Ile Leu His Leu Pro Asn Leu Thr Glu Glu 280 285 290			1579
caa cgt aac ggc ttc atc caa agc ctt aaa gac gat cct tca gtg agc Gln Arg Asn Gly Phe Ile Gln Ser Leu Lys Asp Asp Pro Ser Val Ser 295 300 305 310			1627
aaa gaa att tta gca gaa gct aaa aag cta aac gat gct caa gca cca Lys Glu Ile Leu Ala Glu Ala Lys Lys Leu Asn Asp Ala Gln Ala Pro 315 320 325			1675
aaa gag gaa gac aac aac aag cct ggt aaa gaa gac ggc aac aaa cct Lys Glu Glu Asp Asn Asn Lys Pro Gly Lys Glu Asp Gly Asn Lys Pro 330 335 340			1723
ggt aaa gaa gac ggc aac aaa cct ggt aaa gaa gac aac aaa aaa cct Gly Lys Glu Asp Gly Asn Lys Pro Gly Lys Glu Asp Asn Lys Lys Pro 345 350 355			1771
ggc aaa gaa gac ggc aac aaa cct ggt aaa gaa gac aac aaa aaa cct Gly Lys Glu Asp Gly Asn Lys Pro Gly Lys Glu Asp Asn Lys Lys Pro 360 365 370			1819
ggc aaa gaa gat ggc aac aaa cct ggt aaa gaa gac ggc aac aag cct Gly Lys Glu Asp Gly Asn Lys Pro Gly Lys Glu Asp Gly Asn Lys Pro 375 380 385 390			1867
ggt aaa gaa gat ggc aac aag cct ggt aaa gaa gat ggc aac aag cct Gly Lys Glu Asp Gly Asn Lys Pro Gly Lys Glu Asp Gly Asn Lys Pro 395 400 405			1915
ggt aaa gaa gac ggc aac gga gta cat gtc gtt aaa cct ggt gat aca Gly Lys Glu Asp Gly Asn Gly Val His Val Val Lys Pro Gly Asp Thr 410 415 420			1963
gta aat gac att gca aaa gca aac ggc act act gct gac aaa att gct Val Asn Asp Ile Ala Lys Ala Asn Gly Thr Thr Ala Asp Lys Ile Ala 425 430 435			2011
gca gat aac aaa tta gct gat aaa aac atg atc aaa cct ggt caa gaa Ala Asp Asn Lys Leu Ala Asp Lys Asn Met Ile Lys Pro Gly Gln Glu 440 445 450			2059
ctt gtt gtt gat aag aag caa cca gca aac cat gca gat gct aac aaa Leu Val Val Asp Lys Lys Gln Pro Ala Asn His Ala Asp Ala Asn Lys 455 460 465 470			2107
gct caa gca tta cca gaa act ggt gaa gaa aat cca ttc atc ggt aca Ala Gln Ala Leu Pro Glu Thr Gly Glu Glu Asn Pro Phe Ile Gly Thr 475 480 485			2155
act gta ttt ggt gga tta tca tta gcg tta ggt gca gcg tta tta gct Thr Val Phe Gly Gly Leu Ser Leu Ala Leu Gly Ala Ala Leu Leu Ala 490 495 500			2203
gga cgt cgt cgc gaa cta taa aaacaaacaa tacacaacga tagatatc Gly Arg Arg Arg Glu Leu			2252

505

&lt;210&gt; 88 &lt;211&gt; 508 &lt;212&gt; PRT &lt;213&gt; Staphylococcus aureus &lt;400&gt; 88

Leu Lys Lys Lys Asn Ile Tyr Ser Ile Arg Lys Leu Gly Val Gly Ile  
 1 5 10 15

Ala Ser Val Thr Leu Gly Thr Leu Leu Ile Ser Gly Gly Val Thr Pro  
 20 25 30

Ala Ala Asn Ala Ala Gln His Asp Glu Ala Gln Gln Asn Ala Phe Tyr  
 35 40 45

Gln Val Leu Asn Met Pro Asn Leu Asn Ala Asp Gln Arg Asn Gly Phe  
 50 55 60

Ile Gln Ser Leu Lys Asp Asp Pro Ser Gln Ser Ala Asn Val Leu Gly  
 65 70 75 80

Glu Ala Gln Lys Leu Asn Asp Ser Gln Ala Pro Lys Ala Asp Ala Gln  
 85 90 95

Gln Asn Lys Phe Asn Lys Asp Gln Gln Ser Ala Phe Tyr Glu Ile Leu  
 100 105 110

Asn Met Pro Asn Leu Asn Glu Glu Gln Arg Asn Gly Phe Ile Gln Ser  
 115 120 125

Leu Lys Asp Asp Pro Ser Gln Ser Thr Asn Val Leu Gly Glu Ala Lys  
 130 135 140

Lys Leu Asn Glu Ser Gln Ala Pro Lys Ala Asp Asn Asn Phe Asn Lys  
 145 150 155 160

Glu Gln Gln Asn Ala Phe Tyr Glu Ile Leu Asn Met Pro Asn Leu Asn  
 165 170 175

Glu Glu Gln Arg Asn Gly Phe Ile Gln Ser Leu Lys Asp Asp Pro Ser  
 180 185 190

Gln Ser Ala Asn Leu Leu Ala Glu Ala Lys Lys Leu Asn Glu Ser Gln  
 195 200 205

Ala Pro Lys Ala Asp Asn Lys Phe Asn Lys Glu Gln Gln Asn Ala Phe  
 210 215 220

Tyr Glu Ile Leu His Leu Pro Asn Leu Asn Glu Glu Gln Arg Asn Gly  
225 230 235 240

Phe Ile Gln Ser Leu Lys Asp Asp Pro Ser Gln Ser Ala Asn Leu Leu  
245 250 255

Ala Glu Ala Lys Lys Leu Asn Asp Ala Gln Ala Pro Lys Ala Asp Asn  
260 265 270

Lys Phe Asn Lys Glu Gln Gln Asn Ala Phe Tyr Glu Ile Leu His Leu  
275 280 285

Pro Asn Leu Thr Glu Glu Gln Arg Asn Gly Phe Ile Gln Ser Leu Lys  
290 295 300

Asp Asp Pro Ser Val Ser Lys Glu Ile Leu Ala Glu Ala Lys Lys Leu  
305 310 315 320

Asn Asp Ala Gln Ala Pro Lys Glu Glu Asp Asn Asn Lys Pro Gly Lys  
325 330 335

Glu Asp Gly Asn Lys Pro Gly Lys Glu Asp Gly Asn Lys Pro Gly Lys  
340 345 350

Glu Asp Asn Lys Lys Pro Gly Lys Glu Asp Gly Asn Lys Pro Gly Lys  
355 360 365

Glu Asp Asn Lys Lys Pro Gly Lys Glu Asp Gly Asn Lys Pro Gly Lys  
370 375 380

Glu Asp Gly Asn Lys Pro Gly Lys Glu Asp Gly Asn Lys Pro Gly Lys  
385 390 395 400

Glu Asp Gly Asn Lys Pro Gly Lys Glu Asp Gly Asn Gly Val His Val  
405 410 415

Val Lys Pro Gly Asp Thr Val Asn Asp Ile Ala Lys Ala Asn Gly Thr  
420 425 430

Thr Ala Asp Lys Ile Ala Ala Asp Asn Lys Leu Ala Asp Lys Asn Met  
435 440 445

Ile Lys Pro Gly Gln Glu Leu Val Val Asp Lys Lys Gln Pro Ala Asn  
450 455 460

His Ala Asp Ala Asn Lys Ala Gln Ala Leu Pro Glu Thr Gly Glu Glu  
465 470 475 480

Asn Pro Phe Ile Gly Thr Thr Val Phe Gly Gly Leu Ser Leu Ala Leu  
485 490 495

Gly Ala Ala Leu Leu Ala Gly Arg Arg Arg Glu Leu  
500 505

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<220> <221> CDS <222> (310)..(315) <223>

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ggt gga cag caa atg ggt cgg gat ctg tac gac gat gac gat aag gat 96  
Gly Gly Gln Gln Met Gly Arg Asp Leu Tyr Asp Asp Asp Asp Lys Asp  
20 25 30  
ccg agc tcg aga gga tcc aaa gct gat gcg caa caa aat aac ttc aac 144  
Pro Ser Ser Arg Gly Ser Lys Ala Asp Ala Gln Gln Asn Asn Phe Asn  
35 40 45  
aaa gat caa caa agc gcc ttc tat gaa atc ttg aac atg cct aac tta 192  
Lys Asp Gln Gln Ser Ala Phe Tyr Glu Ile Leu Asn Met Pro Asn Leu  
50 55 60  
aac gaa gcg caa cgc aac ggc ttc att caa agt ctt aaa gac gac cca 240  
Asn Glu Ala Gln Arg Asn Gly Phe Ile Gln Ser Leu Lys Asp Asp Pro  
65 70 75 80  
agc caa agc act aac gtt tta ggt gaa gct aaa aaa tta aac gaa tct 288  
Ser Gln Ser Thr Asn Val Leu Gly Glu Ala Lys Lys Leu Asn Glu Ser  
85 90 95  
caa gca ggg aaa cta gtt tag aaa gct tgatccggc 324  
Gln Ala Gly Lys Leu Val Lys Ala  
100

<210> 90 <211> 104 <212> PRT <213> Staphylococcus aureus <400> 90

Met Arg Gly Ser His His His His His His Gly Met Ala Ser Met Thr  
1 5 10 15

Gly Gly Gln Gln Met Gly Arg Asp Leu Tyr Asp Asp Asp Asp Lys Asp  
20 25 30

Pro Ser Ser Arg Gly Ser Lys Ala Asp Ala Gln Gln Asn Asn Phe Asn  
35 40 45

Lys Asp Gln Gln Ser Ala Phe Tyr Glu Ile Leu Asn Met Pro Asn Leu  
50 55 60

Asn Glu Ala Gln Arg Asn Gly Phe Ile Gln Ser Leu Lys Asp Asp Pro  
65 70 75 80

Ser Gln Ser Thr Asn Val Leu Gly Glu Ala Lys Lys Leu Asn Glu Ser  
85 90 95

Gln Ala Gly Lys Leu Val Lys Ala  
100

<210> 91 <211> 60 <212> PRT <213> Staphylococcus aureus <400> 91

Thr Ala Asp Asn Lys Phe Asn Lys Glu Gln Gln Asn Ala Phe Tyr Glu  
1 5 10 15

Ile Leu His Leu Pro Asn Leu Asn Glu Glu Gln Arg Asn Gly Phe Ile  
20 25 30

Gln Ser Leu Lys Asp Asp Pro Ser Gln Ser Ala Asn Leu Leu Ala Glu  
35 40 45

Ala Lys Lys Leu Asn Asp Ala Gln Ala Pro Lys Ala  
50 55 60

<210> 92 <211> 2593 <212> DNA <213> Homo sapiens <220> <221> CDS  
<222> (56)..(508) <223>

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Tyr Gly Lys Ile Ile Phe Val Leu Leu Leu Ser Ala Ile Val Ser Ile  
5 10 15

tca gca tca agt acc act ggt gtg gca atg cac act tca acc tct tct 154  
Ser Ala Ser Ser Thr Thr Gly Val Ala Met His Thr Ser Thr Ser Ser  
20 25 30

tca gtc aca aag agt tac atc tca tca cag aca aat gat acg cac aaa 202  
Ser Val Thr Lys Ser Tyr Ile Ser Ser Gln Thr Asn Asp Thr His Lys  
35 40 45

cgg gac aca tat gca gcc act cct aga gct cat gaa gtt tca gaa att 250  
Arg Asp Thr Tyr Ala Ala Thr Pro Arg Ala His Glu Val Ser Glu Ile  
50 55 60 65



tct gtt aga act gtt tac cct cca gaa gag gaa acc gga gaa agg gta	298
Ser Val Arg Thr Val Tyr Pro Pro Glu Glu Glu Thr Gly Glu Arg Val	
70 75 80	
caa ctt gcc cat cat ttc tct gaa cca gag ata aca ctc att att ttt	346
Gln Leu Ala His His Phe Ser Glu Pro Glu Ile Thr Leu Ile Ile Phe	
85 90 95	
ggg gtg atg gct ggt gtt att gga acg atc ctc tta att tct tac ggt	394
Gly Val Met Ala Gly Val Ile Gly Thr Ile Leu Leu Ile Ser Tyr Gly	
100 105 110	
att cgc cga ctg ata aag aaa agc cca tct gat gta aaa cct ctc ccc	442
Ile Arg Arg Leu Ile Lys Lys Ser Pro Ser Asp Val Lys Pro Leu Pro	
115 120 125	
tca cct gac aca gac gtg cct tta agt tct gtt gaa ata gaa aat cca	490
Ser Pro Asp Thr Asp Val Pro Leu Ser Ser Val Glu Ile Glu Asn Pro	
130 135 140 145	
gag aca agt gat caa tga gaatctgttc accaaaccaa atgtggaaag	538
Glu Thr Ser Asp Gln	
150	
aacacaaaga agacataaga cttcagtcaa gtgaaaaatt aacatgtgga ctggacactc	598
caataaatta tatacctgcc taagttgtac aatttcagaa tgcaattttc attataatga	658
gttccagtga ctcaatgatg gggaaaaaaaa tctctgtctca ttaatatattc aagataaaga	718
acaaatgttt ccttgaatgc ttgcttttgt gtggttagcat aattttttaga attgtttgag	778
aattctgata caaaacttta gttgaattca tctacgtttg tttaatatta acttaaccta	838
ttctattgta ttataatgat gattctgtca aatgaaaggc ttgaaatacc tagatgaagt	898
ttagattttc ttctattgt aaacttttga gtctggtttc attgttttaa ataaattaag	958
gggacactaa agtctatca ttcatctctt cattctgaac aggcaagata taatattaca	1018
tgaatgatta ctatatatttg ttcacactaa taaagcttat gctcagaaat gccatacaca	1078
cacacaaaca cacacattta tcatttaatg cataaatcaa cacaaaaggc tttcccatta	1138
atatgaaata ttacatatat ataagtcca tttttaaaat aatttgtcta acagtagaac	1198
tatgtcggag cactcactga agcttcgatt tcccactgaa agagttattt gttgtaagta	1258
gagttatccc ggagaaggaa aaagaactta cgacctttct ttataacaga aagctcaact	1318
ctaaattcaa caagatgtgc aaaccggaca tgcaggtgaa tattttaata ggttactata	1378
aggttctcaa ttaaattctt taatctgtcc agtcccagtt tctcttatta ataaaacttt	1438
ggaaattgct ttaaaccatt taaaggaaa ttctagatat agaaactaaa ggactgtgac	1498
tatacagtgat cactcatttg tagtaaaact taaaaagcaa aaacaaaaaa caaaaaagac	1558
cttctgtga tactttattt ccgaactaat aaaaatctat atgacttttt attattgtgt	1618

gataaccaag taaatgtttt ctatttttga tatttttcagg catggtaaca gaaatttacc 1678  
 ttttaataaa ttaaaaaatc taaattttta cctacttgta tgttcggaga gtgtttttgt 1738  
 actatattga ctacttaaaa tagagaatga gactaagaag ggaacatttc tgttgataca 1798  
 tgttttttaa aagtaatttt taagagcatt attaggttaa tttaatccaa ttaatgaccc 1858  
 aaatgccaaag gtaattttta atttacattt ttaataaaag caacatgttg aaacaagaga 1918  
 gggtgagatt aacctttttg ctaaagtaat ttacaagtca aagacaggaa gagatcagag 1978  
 tgaatgtgcc ttcttaacca gagctacaga atttagtgaa taattaaagt acaaactgct 2038  
 ttgacctcct tgaacttttc caagcaattt ctctgtactt ctatatatga atgtcttagc 2098  
 caattttctg ctactataac agaatacgac agactgggta atttaaaaag aaaagaaatt 2158  
 tattttcttc ctagttctgg aggctgggaa ggcgaagggc atggcactga catctgcctt 2218  
 gtaactgatg agaaccttct tactgcatga taacaaagca gcaaggcaag caaaagcgta 2278  
 agatgaagag agaggaaatg aagccaaaca catcctttca tcagaagccc attccctcta 2338  
 taaggcgta ctacatttat gagaatggag tcctcatgac ctaatcgtga ccttaaaggc 2398  
 cctcccaac actgttaciaa tggcaattaa atttcaacaa aggttccaga ggtgacattc 2458  
 gaatcagcaa tgaaattttc atagttaaatt ttggtattcg tgggggaaga aatgaccatt 2518  
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 agataccatg accccc 2593

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 20 25 30  
 Ser Ser Val Thr Lys Ser Tyr Ile Ser Ser Gln Thr Asn Asp Thr His  
 35 40 45  
 Lys Arg Asp Thr Tyr Ala Ala Thr Pro Arg Ala His Glu Val Ser Glu  
 50 55 60  
 Ile Ser Val Arg Thr Val Tyr Pro Pro Glu Glu Glu Thr Gly Glu Arg  
 65 70 75 80  
 Val Gln Leu Ala His His Phe Ser Glu Pro Glu Ile Thr Leu Ile Ile  
 85 90 95

Phe Gly Val Met Ala Gly Val Ile Gly Thr Ile Leu Leu Ile Ser Tyr  
 100 105 110

Gly Ile Arg Arg Leu Ile Lys Lys Ser Pro Ser Asp Val Lys Pro Leu  
 115 120 125

Pro Ser Pro Asp Thr Asp Val Pro Leu Ser Ser Val Glu Ile Glu Asn  
 130 135 140

Pro Glu Thr Ser Asp Gln  
 145 150

<210> 94 <211> 5185 <212> DNA <213> Homo sapiens <220> <221> CDS  
 <222> (104)..(4474) <223>

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 gccctcctgt ccatcaggag aaggaaagga taaaccctgg gcc atg agg cta ccc 115  
 Met Arg Leu Pro  
 1  
 ctg ctc ctg gtt ttt gcc tct gtc att ccg ggt gct gtt ctc cta ctg 163  
 Leu Leu Leu Val Phe Ala Ser Val Ile Pro Gly Ala Val Leu Leu Leu  
 5 10 15 20  
 gac acc agg caa ttt tta atc tat aat gaa gat cac aag cgc tgc gtg 211  
 Asp Thr Arg Gln Phe Leu Ile Tyr Asn Glu Asp His Lys Arg Cys Val  
 25 30 35  
 gat gca gtg agt ccc agt gcc gtc caa acc gca gct tgc aac cag gat 259  
 Asp Ala Val Ser Pro Ser Ala Val Gln Thr Ala Ala Cys Asn Gln Asp  
 40 45 50  
 gcc gaa tca cag aaa ttc cga tgg gtg tcc gaa tct cag att atg agt 307  
 Ala Glu Ser Gln Lys Phe Arg Trp Val Ser Glu Ser Gln Ile Met Ser  
 55 60 65  
 gtt gca ttt aaa tta tgc ctg gga gtg cca tca aaa aca gac tgg gtt 355  
 Val Ala Phe Lys Leu Cys Leu Gly Val Pro Ser Lys Thr Asp Trp Val  
 70 75 80  
 gct atc act ctc tat gcc tgt gac tca aaa agt gaa ttt cag aaa tgg 403  
 Ala Ile Thr Leu Tyr Ala Cys Asp Ser Lys Ser Glu Phe Gln Lys Trp  
 85 90 95 100  
 gag tgc aaa aat gac aca ctt ttg ggg atc aaa gga gaa gat tta ttt 451  
 Glu Cys Lys Asn Asp Thr Leu Leu Gly Ile Lys Gly Glu Asp Leu Phe  
 105 110 115  
 ttt aac tac ggc aac aga caa gaa aag aat att atg ctc tac aag gga 499  
 Phe Asn Tyr Gly Asn Arg Gln Glu Lys Asn Ile Met Leu Tyr Lys Gly  
 120 125 130  
 tcg ggt tta tgg agc agg tgg aag atc tat gga acc aca gac aat ctg 547

Ser	Gly	Leu	Trp	Ser	Arg	Trp	Lys	Ile	Tyr	Gly	Thr	Thr	Asp	Asn	Leu		
		135					140					145					
tgc	tcc	aga	ggt	tat	gaa	gcc	atg	tat	acg	cta	cta	ggc	aat	gcc	aat		595
Cys	Ser	Arg	Gly	Tyr	Glu	Ala	Met	Tyr	Thr	Leu	Leu	Gly	Asn	Ala	Asn		
	150					155					160						
gga	gca	acc	tgt	gca	ttc	ccg	ttc	aag	ttt	gaa	aac	aag	tgg	tac	gca		643
Gly	Ala	Thr	Cys	Ala	Phe	Pro	Phe	Lys	Phe	Glu	Asn	Lys	Trp	Tyr	Ala		
165					170					175					180		
gat	tgc	acg	agt	gct	ggg	cgg	tcg	gat	gga	tgg	ctc	tgg	tgc	gga	acc		691
Asp	Cys	Thr	Ser	Ala	Gly	Arg	Ser	Asp	Gly	Trp	Leu	Trp	Cys	Gly	Thr		
				185					190					195			
act	act	gac	tat	gac	aca	gac	aag	cta	ttt	gga	tat	tgt	cca	ttg	aaa		739
Thr	Thr	Asp	Tyr	Asp	Thr	Asp	Lys	Leu	Phe	Gly	Tyr	Cys	Pro	Leu	Lys		
			200					205					210				
ttt	gag	ggc	agt	gaa	agc	tta	tgg	aat	aaa	gac	ccg	ctg	acc	agc	gtt		787
Phe	Glu	Gly	Ser	Glu	Ser	Leu	Trp	Asn	Lys	Asp	Pro	Leu	Thr	Ser	Val		
	215						220					225					
tcc	tac	cag	ata	aac	tcc	aaa	tcc	gct	tta	acg	tgg	cac	caa	gcg	agg		835
Ser	Tyr	Gln	Ile	Asn	Ser	Lys	Ser	Ala	Leu	Thr	Trp	His	Gln	Ala	Arg		
	230					235					240						
aaa	agc	tgc	caa	caa	cag	aac	gct	gag	ctc	ctg	agc	atc	aca	gag	ata		883
Lys	Ser	Cys	Gln	Gln	Gln	Asn	Ala	Glu	Leu	Leu	Ser	Ile	Thr	Glu	Ile		
245					250					255					260		
cat	gag	caa	aca	tac	ctg	aca	gga	tta	acc	agt	tcc	ttg	acc	tca	gga		931
His	Glu	Gln	Thr	Tyr	Leu	Thr	Gly	Leu	Thr	Ser	Ser	Leu	Thr	Ser	Gly		
				265					270					275			
ctc	tgg	att	gga	ctt	aac	agt	ctg	agc	ttc	aac	agc	ggt	tgg	cag	tgg		979
Leu	Trp	Ile	Gly	Leu	Asn	Ser	Leu	Ser	Phe	Asn	Ser	Gly	Trp	Gln	Trp		
			280					285					290				
agt	gac	cgc	agt	cct	ttc	cga	tat	ttg	aac	tgg	tta	cca	gga	agt	cca		1027
Ser	Asp	Arg	Ser	Pro	Phe	Arg	Tyr	Leu	Asn	Trp	Leu	Pro	Gly	Ser	Pro		
		295					300					305					
tca	gct	gaa	cct	gga	aaa	agc	tgt	gtg	tca	cta	aat	cct	gga	aaa	aat		1075
Ser	Ala	Glu	Pro	Gly	Lys	Ser	Cys	Val	Ser	Leu	Asn	Pro	Gly	Lys	Asn		
	310					315					320						
gct	aaa	tgg	gaa	aat	ctg	gaa	tgt	gtt	cag	aaa	ctg	ggc	tat	att	tgc		1123
Ala	Lys	Trp	Glu	Asn	Leu	Glu	Cys	Val	Gln	Lys	Leu	Gly	Tyr	Ile	Cys		
325					330					335					340		
aaa	aag	ggc	aac	acc	act	tta	aat	tct	ttt	gtt	att	ccc	tca	gaa	agt		1171
Lys	Lys	Gly	Asn	Thr	Thr	Leu	Asn	Ser	Phe	Val	Ile	Pro	Ser	Glu	Ser		
				345					350					355			
gat	gtg	cct	act	cac	tgt	cct	agt	cag	tgg	tgg	ccg	tat	gcc	ggt	cac		1219
Asp	Val	Pro	Thr	His	Cys	Pro	Ser	Gln	Trp	Trp	Pro	Tyr	Ala	Gly	His		
				360				365					370				
tgt	tac	aag	att	cac	aga	gat	gag	aaa	aaa	atc	cag	agg	gat	gct	ctg		1267

Cys	Tyr	Lys	Ile	His	Arg	Asp	Glu	Lys	Lys	Ile	Gln	Arg	Asp	Ala	Leu		
		375					380					385					
acc	acc	tgc	agg	aag	gaa	ggc	ggt	gac	ctc	aca	agt	atc	cac	acc	atc		1315
Thr	Thr	Cys	Arg	Lys	Glu	Gly	Gly	Asp	Leu	Thr	Ser	Ile	His	Thr	Ile		
		390				395					400						
gag	gaa	ttg	gac	ttt	att	atc	tcc	cag	cta	gga	tat	gag	cca	aat	gac		1363
Glu	Glu	Leu	Asp	Phe	Ile	Ile	Ser	Gln	Leu	Gly	Tyr	Glu	Pro	Asn	Asp		
405					410					415					420		
gaa	ttg	tgg	atc	ggc	tta	aat	gac	att	aag	att	caa	atg	tac	ttt	gag		1411
Glu	Leu	Trp	Ile	Gly	Leu	Asn	Asp	Ile	Lys	Ile	Gln	Met	Tyr	Phe	Glu		
				425					430					435			
tgg	agt	gat	ggg	acc	cct	gta	acg	ttt	acc	aaa	tgg	ctt	cgt	gga	gaa		1459
Trp	Ser	Asp	Gly	Thr	Pro	Val	Thr	Phe	Thr	Lys	Trp	Leu	Arg	Gly	Glu		
			440					445					450				
cca	agc	cat	gaa	aac	aac	aga	cag	gag	gat	tgt	gtg	gtg	atg	aaa	ggc		1507
Pro	Ser	His	Glu	Asn	Asn	Arg	Gln	Glu	Asp	Cys	Val	Val	Met	Lys	Gly		
		455					460						465				
aag	gat	ggg	tac	tgg	gca	gat	cgg	ggc	tgt	gag	tgg	cct	ctt	ggc	tac		1555
Lys	Asp	Gly	Tyr	Trp	Ala	Asp	Arg	Gly	Cys	Glu	Trp	Pro	Leu	Gly	Tyr		
	470					475					480						
atc	tgc	aag	atg	aaa	tca	cga	agc	caa	ggt	cca	gaa	ata	gtg	gaa	gtc		1603
Ile	Cys	Lys	Met	Lys	Ser	Arg	Ser	Gln	Gly	Pro	Glu	Ile	Val	Glu	Val		
485					490					495					500		
gaa	aaa	ggc	tgc	agg	aaa	ggc	tgg	aaa	aaa	cat	cac	ttt	tac	tgc	tat		1651
Glu	Lys	Gly	Cys	Arg	Lys	Gly	Trp	Lys	Lys	His	His	Phe	Tyr	Cys	Tyr		
				505					510					515			
atg	att	gga	cat	acg	ctt	tca	aca	ttt	gca	gaa	gca	aac	caa	acc	tgt		1699
Met	Ile	Gly	His	Thr	Leu	Ser	Thr	Phe	Ala	Glu	Ala	Asn	Gln	Thr	Cys		
			520					525					530				
aat	aat	gag	aat	gct	tat	tta	aca	act	att	gaa	gac	aga	tat	gaa	caa		1747
Asn	Asn	Glu	Asn	Ala	Tyr	Leu	Thr	Thr	Ile	Glu	Asp	Arg	Tyr	Glu	Gln		
		535					540					545					
gcc	ttc	ctg	act	agt	ttc	gtt	ggc	tta	agg	cct	gaa	aaa	tat	ttc	tgg		1795
Ala	Phe	Leu	Thr	Ser	Phe	Val	Gly	Leu	Arg	Pro	Glu	Lys	Tyr	Phe	Trp		
	550					555					560						
aca	gga	ctt	tca	gat	ata	caa	acc	aaa	ggg	act	ttt	cag	tgg	acc	atc		1843
Thr	Gly	Leu	Ser	Asp	Ile	Gln	Thr	Lys	Gly	Thr	Phe	Gln	Trp	Thr	Ile		
565					570					575					580		
gag	gaa	gag	gtt	cgg	ttc	acc	cac	tgg	aat	tca	gat	atg	cca	ggg	cga		1891
Glu	Glu	Glu	Val	Arg	Phe	Thr	His	Trp	Asn	Ser	Asp	Met	Pro	Gly	Arg		
				585					590					595			
aag	cca	ggg	tgt	gtt	gcc	atg	aga	acc	ggg	att	gca	ggg	ggc	tta	tgg		1939
Lys	Pro	Gly	Cys	Val	Ala	Met	Arg	Thr	Gly	Ile	Ala	Gly	Gly	Leu	Trp		
			600					605					610				
gat	gtt	ttg	aaa	tgt	gat	gaa	aag	gca	aaa	ttt	gtg	tgc	aag	cac	tgg		1987

Asp Val Leu Lys Cys Asp Glu Lys Ala Lys Phe Val Cys Lys His Trp	
615	620 625
gca gaa gga gta acc cac cca ccg aag ccc acg acg act ccc gaa ccc	2035
Ala Glu Gly Val Thr His Pro Pro Lys Pro Thr Thr Thr Pro Glu Pro	
630	635 640
aaa tgt ccg gag gat tgg ggc gcc agc agt aga aca agc ttg tgt ttc	2083
Lys Cys Pro Glu Asp Trp Gly Ala Ser Ser Arg Thr Ser Leu Cys Phe	
645	650 655 660
aag ctg tat gca aaa gga aaa cat gag aag aaa acg tgg ttt gaa tct	2131
Lys Leu Tyr Ala Lys Gly Lys His Glu Lys Lys Thr Trp Phe Glu Ser	
665	670 675
cga gat ttt tgt cga gct ctg ggt gga gac tta gct agc atc aat aac	2179
Arg Asp Phe Cys Arg Ala Leu Gly Gly Asp Leu Ala Ser Ile Asn Asn	
680	685 690
aaa gag gaa cag caa aca ata tgg cga tta ata aca gct agt gga agc	2227
Lys Glu Glu Gln Gln Thr Ile Trp Arg Leu Ile Thr Ala Ser Gly Ser	
695	700 705
tac cac aaa ctg ttt tgg ttg gga ttg aca tat gga agc cct tca gaa	2275
Tyr His Lys Leu Phe Trp Leu Gly Leu Thr Tyr Gly Ser Pro Ser Glu	
710	715 720
ggt ttt act tgg agt gat ggt tct cct gtt tca tat gaa aac tgg gct	2323
Gly Phe Thr Trp Ser Asp Gly Ser Pro Val Ser Tyr Glu Asn Trp Ala	
725	730 735 740
tat gga gaa cct aat aat tat caa aat gtt gaa tac tgt ggt gag ctg	2371
Tyr Gly Glu Pro Asn Asn Tyr Gln Asn Val Glu Tyr Cys Gly Glu Leu	
745	750 755
aaa ggt gac cct act atg tct tgg aat gat att aat tgt gaa cac ctt	2419
Lys Gly Asp Pro Thr Met Ser Trp Asn Asp Ile Asn Cys Glu His Leu	
760	765 770
aac aac tgg att tgc cag ata caa aaa gga caa aca cca aaa cct gag	2467
Asn Asn Trp Ile Cys Gln Ile Gln Lys Gly Gln Thr Pro Lys Pro Glu	
775	780 785
cca aca cca gct cct caa gac aat cca cca gtt act gaa gat ggg tgg	2515
Pro Thr Pro Ala Pro Gln Asp Asn Pro Pro Val Thr Glu Asp Gly Trp	
790	795 800
gtt att tac aaa gac tac cag tat tat ttc agc aaa gag aag gaa acc	2563
Val Ile Tyr Lys Asp Tyr Gln Tyr Tyr Phe Ser Lys Glu Lys Glu Thr	
805	810 815 820
atg gac aat gcg cga gcg ttt tgc aag agg aat ttt ggt gat ctt gtt	2611
Met Asp Asn Ala Arg Ala Phe Cys Lys Arg Asn Phe Gly Asp Leu Val	
825	830 835
tct att caa agt gaa agt gaa aag aag ttt cta tgg aaa tat gta aac	2659
Ser Ile Gln Ser Glu Ser Glu Lys Lys Phe Leu Trp Lys Tyr Val Asn	
840	845 850
aga aat gat gca cag tct gca tat ttt att ggt tta ttg atc agc ttg	2707

Arg	Asn	Asp	Ala	Gln	Ser	Ala	Tyr	Phe	Ile	Gly	Leu	Leu	Ile	Ser	Leu		
	855						860					865					
gat	aaa	aag	ttt	gct	tgg	atg	gat	gga	agc	aaa	gtg	gat	tac	gtg	tct		2755
Asp	Lys	Lys	Phe	Ala	Trp	Met	Asp	Gly	Ser	Lys	Val	Asp	Tyr	Val	Ser		
	870					875					880						
tgg	gcc	aca	ggt	gaa	ccc	aat	ttt	gca	aat	gaa	gat	gaa	aac	tgt	gtg		2803
Trp	Ala	Thr	Gly	Glu	Pro	Asn	Phe	Ala	Asn	Glu	Asp	Glu	Asn	Cys	Val		
	885				890					895					900		
acc	atg	tat	tca	aat	tca	ggg	ttt	tgg	aat	gac	att	aac	tgt	ggc	tat		2851
Thr	Met	Tyr	Ser	Asn	Ser	Gly	Phe	Trp	Asn	Asp	Ile	Asn	Cys	Gly	Tyr		
				905					910					915			
cca	aac	gcc	ttc	att	tgc	cag	cga	cat	aac	agt	agt	atc	aat	gct	acc		2899
Pro	Asn	Ala	Phe	Ile	Cys	Gln	Arg	His	Asn	Ser	Ser	Ile	Asn	Ala	Thr		
			920					925					930				
aca	gtt	atg	cct	acc	atg	ccc	tcg	gtc	cca	tca	ggg	tgc	aag	gaa	ggt		2947
Thr	Val	Met	Pro	Thr	Met	Pro	Ser	Val	Pro	Ser	Gly	Cys	Lys	Glu	Gly		
		935					940					945					
tgg	aat	ttc	tac	agc	aac	aag	tgt	ttc	aaa	atc	ttt	gga	ttt	atg	gaa		2995
Trp	Asn	Phe	Tyr	Ser	Asn	Lys	Cys	Phe	Lys	Ile	Phe	Gly	Phe	Met	Glu		
	950					955					960						
gaa	gaa	aga	aaa	aat	tgg	caa	gag	gca	cga	aaa	gct	tgt	ata	ggc	ttt		3043
Glu	Glu	Arg	Lys	Asn	Trp	Gln	Glu	Ala	Arg	Lys	Ala	Cys	Ile	Gly	Phe		
	965				970					975					980		
gga	ggg	aat	ctg	gtc	tcc	ata	caa	aat	gaa	aaa	gag	caa	gca	ttt	ctt		3091
Gly	Gly	Asn	Leu	Val	Ser	Ile	Gln	Asn	Glu	Lys	Glu	Gln	Ala	Phe	Leu		
				985					990					995			
acc	tat	cac	atg	aag	gac	tcc	act	ttc	agt	gcc	tgg	act	ggg	ctg			3136
Thr	Tyr	His	Met	Lys	Asp	Ser	Thr	Phe	Ser	Ala	Trp	Thr	Gly	Leu			
			1000					1005					1010				
aat	gat	gtc	aat	tca	gaa	cac	acg	ttc	ctt	tgg	acg	gat	gga	cga			3181
Asn	Asp	Val	Asn	Ser	Glu	His	Thr	Phe	Leu	Trp	Thr	Asp	Gly	Arg			
			1015					1020					1025				
gga	gtc	cat	tac	aca	aac	tgg	ggg	aaa	ggt	tac	cct	ggt	gga	aga			3226
Gly	Val	His	Tyr	Thr	Asn	Trp	Gly	Lys	Gly	Tyr	Pro	Gly	Gly	Arg			
			1030					1035					1040				
aga	agc	agt	ctt	tct	tat	gaa	gat	gct	gac	tgt	gtt	gtt	att	att			3271
Arg	Ser	Ser	Leu	Ser	Tyr	Glu	Asp	Ala	Asp	Cys	Val	Val	Ile	Ile			
			1045					1050					1055				
gga	ggt	gca	tca	aat	gaa	gca	gga	aaa	tgg	atg	gat	gat	acc	tgc			3316
Gly	Gly	Ala	Ser	Asn	Glu	Ala	Gly	Lys	Trp	Met	Asp	Asp	Thr	Cys			
			1060					1065					1070				
gac	agt	aaa	cga	ggc	tac	ata	tgc	cag	aca	cga	tcc	gac	cct	tcc			3361
Asp	Ser	Lys	Arg	Gly	Tyr	Ile	Cys	Gln	Thr	Arg	Ser	Asp	Pro	Ser			
			1075					1080					1085				
ttg	act	aat	cct	cca	gca	acg	att	caa	aca	gat	ggc	ttt	gtt	aaa			3406

Leu Thr Asn Pro	Pro Ala Thr Ile Gln	Thr Asp Gly Phe Val Lys	
1090	1095	1100	
tat ggc aaa agc	agc tat tca ctc atg	aga caa aaa ttt caa tgg	3451
Tyr Gly Lys Ser	Ser Tyr Ser Leu Met	Arg Gln Lys Phe Gln Trp	
1105	1110	1115	
cat gaa gcg gag	aca tac tgc aag ctt	cac aat tcc ctt ata gcc	3496
His Glu Ala Glu	Thr Tyr Cys Lys Leu	His Asn Ser Leu Ile Ala	
1120	1125	1130	
agc att ctg gat	ccc tac agt aat gca	ttt gcg tgg ctg cag atg	3541
Ser Ile Leu Asp	Pro Tyr Ser Asn Ala	Phe Ala Trp Leu Gln Met	
1135	1140	1145	
gaa aca tct aat	gaa cgt gtg tgg atc	gcc ctg aac agt aac ttg	3586
Glu Thr Ser Asn	Glu Arg Val Trp Ile	Ala Leu Asn Ser Asn Leu	
1150	1155	1160	
act gat aat caa	tac act tgg act gat	aag tgg agg gtg agg tac	3631
Thr Asp Asn Gln	Tyr Thr Trp Thr Asp	Lys Trp Arg Val Arg Tyr	
1165	1170	1175	
act aac tgg gct	gct gat gag ccc aaa	ttg aaa tca gca tgt gtt	3676
Thr Asn Trp Ala	Ala Asp Glu Pro Lys	Leu Lys Ser Ala Cys Val	
1180	1185	1190	
tat ctg gat ctt	gat ggc tac tgg aag	aca gca cat tgc aat gaa	3721
Tyr Leu Asp Leu	Asp Gly Tyr Trp Lys	Thr Ala His Cys Asn Glu	
1195	1200	1205	
agt ttt tac ttt	ctc tgt aaa aga tca	gat gaa atc cct gct act	3766
Ser Phe Tyr Phe	Leu Cys Lys Arg Ser	Asp Glu Ile Pro Ala Thr	
1210	1215	1220	
gaa ccc cca caa	ctg cct ggc aga tgc	ccg gag tca gat cac aca	3811
Glu Pro Pro Gln	Leu Pro Gly Arg Cys	Pro Glu Ser Asp His Thr	
1225	1230	1235	
gca tgg att cct	ttc cat ggt cac tgt	tac tat att gag tcc tca	3856
Ala Trp Ile Pro	Phe His Gly His Cys	Tyr Tyr Ile Glu Ser Ser	
1240	1245	1250	
tat aca aga aac	tgg ggc caa gct tct	ctg gaa tgt ctt cga atg	3901
Tyr Thr Arg Asn	Trp Gly Gln Ala Ser	Leu Glu Cys Leu Arg Met	
1255	1260	1265	
ggt tcc tct ctg	gtt tcc att gaa agt	gct gca gaa tcc agt ttt	3946
Gly Ser Ser Leu	Val Ser Ile Glu Ser	Ala Ala Glu Ser Ser Phe	
1270	1275	1280	
ctg tca tat cgg	gtt gag cca ctt aaa	agt aaa acc aat ttt tgg	3991
Leu Ser Tyr Arg	Val Glu Pro Leu Lys	Ser Lys Thr Asn Phe Trp	
1285	1290	1295	
ata gga ttg ttc	aga aat gtt gaa ggg	acg tgg ctg tgg ata aat	4036
Ile Gly Leu Phe	Arg Asn Val Glu Gly	Thr Trp Leu Trp Ile Asn	
1300	1305	1310	
aac agt ccg gtc	tcc ttt gtc aac tgg	aac aca gga gat ccc tct	4081



Asn Ser Pro Val	Ser Phe Val Asn Trp	Asn Thr Gly Asp Pro Ser	
1315	1320	1325	
ggt gaa cgg aat	gat tgt gta gct tta	cat gcg tct tct ggg ttt	4126
Gly Glu Arg Asn	Asp Cys Val Ala Leu	His Ala Ser Ser Gly Phe	
1330	1335	1340	
tgg agt aat att	cac tgt tct tcc tac	aaa gga tat att tgt aaa	4171
Trp Ser Asn Ile	His Cys Ser Ser Tyr	Lys Gly Tyr Ile Cys Lys	
1345	1350	1355	
aga cca aaa att	att gat gct aaa cct	act cat gaa tta ctt aca	4216
Arg Pro Lys Ile	Ile Asp Ala Lys Pro	Thr His Glu Leu Leu Thr	
1360	1365	1370	
aca aaa gct gac	aca agg aag atg gac	cct tct aaa ccg tct tcc	4261
Thr Lys Ala Asp	Thr Arg Lys Met Asp	Pro Ser Lys Pro Ser Ser	
1375	1380	1385	
aac gtg gcc gga	gta gtc atc att gtg	atc ctc ctg att tta acg	4306
Asn Val Ala Gly	Val Val Ile Ile Val	Ile Leu Leu Ile Leu Thr	
1390	1395	1400	
ggt gct ggc ctt	gcc gcc tat ttc ttt	tat aag aaa aga cgt gtg	4351
Gly Ala Gly Leu	Ala Ala Tyr Phe Phe	Tyr Lys Lys Arg Arg Val	
1405	1410	1415	
cac cta cct caa	gag ggc gcc ttt gaa	aac act ctg tat ttt aac	4396
His Leu Pro Gln	Glu Gly Ala Phe Glu	Asn Thr Leu Tyr Phe Asn	
1420	1425	1430	
agt cag tca agc	cca gga act agt gat	atg aaa gat ctc gtg ggc	4441
Ser Gln Ser Ser	Pro Gly Thr Ser Asp	Met Lys Asp Leu Val Gly	
1435	1440	1445	
aat att gaa cag	aat gaa cac tcg gtc	atc tag tacctcaatg	4484
Asn Ile Glu Gln	Asn Glu His Ser Val	Ile	
1450	1455		
cgattctgag atatttgaat	ttcataaaat tgtaactgaa	attttaaatt tttagttcaa	4544
tgtgattgtt ttctttaaaa	tgagtactga attgtactgg	tctgtccttt tttcctttgc	4604
ctaattgaag aaataattgc	ttgtttttcta gcttggaag	atattttcat aaaagagga	4664
taacaatgct gattactacc	ttttaaaata ttttagataa	atgcacagca ccacagcacc	4724
acatctaagc attagtgatg	ggtagctgat gtcagcttca	tgtggatttt aagcactcta	4784
gaaacaatga agcttcttgg	catatttttaa ggagctccca	aaatgtgtta cctattaaat	4844
tgtaactcag caagtagaag	accatttgaa aagtcaggta	caaatttcct caagtggcat	4904
aaaaatgtag tcagttttct	cttttaccag tttttatttc	caactccaatt atttagaact	4964
ttattttgtac atgtgcagaa	gaataaggca gctgagaatc	ttgtttcccc caagagagtt	5024
ttacaggctg agtgttgcaa	atgtgttctt tgtoctgtta	tatgtatatc aggaatacaa	5084
ggatgtgaaa taaaactgta	aatttgcata actggatgta	cttagataat gtgaaataaa	5144

cattaaagac aaggtctatt tttaataaaaa aaaaaaaaaa a

5185

&lt;210&gt; 95 &lt;211&gt; 1456 &lt;212&gt; PRT &lt;213&gt; Homo sapiens &lt;400&gt; 95

Met Arg Leu Pro Leu Leu Leu Val Phe Ala Ser Val Ile Pro Gly Ala  
1 5 10 15Val Leu Leu Leu Asp Thr Arg Gln Phe Leu Ile Tyr Asn Glu Asp His  
20 25 30Lys Arg Cys Val Asp Ala Val Ser Pro Ser Ala Val Gln Thr Ala Ala  
35 40 45Cys Asn Gln Asp Ala Glu Ser Gln Lys Phe Arg Trp Val Ser Glu Ser  
50 55 60Gln Ile Met Ser Val Ala Phe Lys Leu Cys Leu Gly Val Pro Ser Lys  
65 70 75 80Thr Asp Trp Val Ala Ile Thr Leu Tyr Ala Cys Asp Ser Lys Ser Glu  
85 90 95Phe Gln Lys Trp Glu Cys Lys Asn Asp Thr Leu Leu Gly Ile Lys Gly  
100 105 110Glu Asp Leu Phe Phe Asn Tyr Gly Asn Arg Gln Glu Lys Asn Ile Met  
115 120 125Leu Tyr Lys Gly Ser Gly Leu Trp Ser Arg Trp Lys Ile Tyr Gly Thr  
130 135 140Thr Asp Asn Leu Cys Ser Arg Gly Tyr Glu Ala Met Tyr Thr Leu Leu  
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Cys Glu His Leu Asn Asn Trp Ile Cys Gln Ile Gln Lys Gly Gln Thr  
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Lys Tyr Val Asn Arg Asn Asp Ala Gln Ser Ala Tyr Phe Ile Gly Leu  
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Pro Trp Asn Glu Pro Pro Val Ile Leu Ser Met Val Ile Leu Ser Leu  
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Cys Ile Trp Val Val Ala Phe Val Met Cys Ile Pro Val Phe Val Tyr  
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Arg Glu Ile Phe Thr Thr Asp Asn His Asn Arg Cys Gly Tyr Lys Phe  
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Val Pro Thr Val Phe Gln Pro Gln Thr Phe Gln Arg Pro Ser Ala Asp  
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Ser Leu Pro Arg Gly Ser Ala Arg Leu Thr Ser Gln Asn Leu Tyr Ser  
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Phe Tyr Glu Ser Glu Leu Pro Gln Gly Phe Gln Asp Tyr Tyr Asn Leu  
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Gly Gln Phe Thr Asp Asp Asp Gln Val Pro Thr Pro Leu Val Ala Ile  
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Phe Ile Ile Ile Met Tyr Phe Val Lys Ile Lys Trp Tyr Ser Ile Leu  
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Ile Val Ile Tyr Ala Tyr Ile Thr Lys Ile Ser Asp Ser Ile Phe Val  
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Ser Tyr Ile Ile Asn Arg Val Leu Lys Lys Ile Ser Thr Pro Tyr Leu  
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Lys Arg Asn Gln Glu Glu Ile Glu Thr Tyr Tyr Glu Tyr Thr Leu Lys  
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Thr Arg Leu Gln Leu Leu Ser Lys Asp Asn Ser Val Glu Thr Ile Glu  
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Leu Lys Arg Gly Ser Asn Ser Val Tyr Val Gln Tyr Asp Asp Ile Met  
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Phe Phe Glu Ser Ser Thr Lys Ser His Arg Leu Ile Ala His Leu Asp  
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Asn Arg Gln Ile Glu Phe Tyr Gly Asn Leu Lys Glu Leu Ser Gln Leu  
 180 185 190

Asp Asp Arg Phe Phe Arg Cys His Asn Ser Phe Val Val Asn Arg His  
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Asp Met Leu Leu Tyr Gln Asp Thr Ile Pro Ile Leu Ser Glu Asn Pro	
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Glu Ile Asn Ala Leu Tyr Gly Ile Ser Asn Lys Gly Ala Gly Thr Phe	
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Asp Lys Ile Lys Asn Val Leu Ser Leu Ile Lys Thr Leu Arg Ala Asn	
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Asn Tyr Asp Leu Val Ile Asn Leu Thr Asp Gln Trp Met Val Ala Leu	
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Leu Val Arg Cys Leu Pro Ala Arg Met Lys Ile Ser Gln Leu Tyr Gly	
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His Arg Gln His Gly Ile Trp Lys Lys Ser Phe Thr His Leu Ala Pro	
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Ile His Gly Thr His Ile Val Glu Arg Asn Leu Ser Val Leu Glu Pro	
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Cys Val Asp Glu Ile Ala Arg Gly Cys Glu Thr Lys Pro Ile Thr Gly	
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Leu Ser Val Ile Pro Ala Glu Asp Val Ile Ala Ala Thr Glu Lys Leu	
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Leu Pro Glu Asp Ala Pro Ser Ala Asp Arg Asn Ala Gln Leu Ile	
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Val Ala Phe Cys Leu Tyr Lys Tyr Phe Pro Phe Gly Gly Leu Gln Arg	
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Arg Val Tyr Thr Gln Ser Trp Glu Gly Asp Cys Pro Lys Ala Phe Glu	
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Leu Ile Gln Val Pro Val Lys Ser His Thr Asn His Gly Arg Asn Ala	
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cac	aat	acg	ctt	tta	ttt	gtt	gtt	ggt	cag	gat	aag	ccg	cga	aaa	ttt	2200	
His	Asn	Thr	Leu	Leu	Phe	Val	Val	Gly	Gln	Asp	Lys	Pro	Arg	Lys	Phe		
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Ser	Gly	Arg	Asn	Asp	Val	Ser	Glu	Leu	Met	Ala	Ala	Ala	Asp	Leu	Leu		
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Leu	His	Pro	Ala	Tyr	Gln	Glu	Ala	Ala	Gly	Ile	Val	Leu	Leu	Glu	Ala		
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Ile	Thr	Ala	Gly	Leu	Pro	Val	Leu	Thr	Thr	Ala	Val	Cys	Gly	Tyr	Ala		
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His	Tyr	Ile	Ala	Asp	Ala	Asn	Cys	Gly	Thr	Val	Ile	Ala	Glu	Pro	Phe		
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Ser	Gln	Glu	Gln	Leu	Asn	Glu	Val	Leu	Arg	Lys	Ala	Leu	Thr	Gln	Ser		
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Gly Leu Met Val Glu Leu Lys Glu Pro Leu Ala Thr Leu Trp Arg Gly	
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Lys Asp Ala Phe Ala Glu Val Lys Lys Leu Asn Gly Glu Val Phe Arg	
730	745
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Glu Leu Glu Thr Arg Arg Thr Leu Arg Phe Glu Leu Ser Gly Lys Ser	
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Tyr Phe Leu Lys Trp His Lys Gly Thr Thr Leu Lys Glu Ile Ile Lys	
765	775
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Asn Leu Leu Ser Leu Arg Met Pro Val Leu Gly Ala Asp Arg Glu Trp	
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His Ala Ile His Arg Leu Ser Asp Val Gly Val Asp Thr Met Lys Gly	
795	805
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Ile Gly Phe Gly Glu Lys Gly Leu Asn Pro Leu Thr Arg Ala Ser Phe	
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Ile Ile Thr Glu Asp Leu Thr Pro Thr Ile Ser Leu Glu Asp Tyr Cys	
830	840
gcc gat tgg gca gtc aac ccg cct gat ata cgt gtt aag cgt atg ctg	3017
Ala Asp Trp Ala Val Asn Pro Pro Asp Ile Arg Val Lys Arg Met Leu	
845	855
atc gca cgt gta gca act atg gtg cgt aaa atg cat act gca ggg ata	3065
Ile Ala Arg Val Ala Thr Met Val Arg Lys Met His Thr Ala Gly Ile	
860	870
aat cac cgc gac tgt tac att tgc cac ttt ttg ctt cat ttg cca ttt	3113
Asn His Arg Asp Cys Tyr Ile Cys His Phe Leu Leu His Leu Pro Phe	
875	885
act ggc cgg gaa gat gaa tta aaa att tca gtt atc gat ctg cat cgg	3161
Thr Gly Arg Glu Asp Glu Leu Lys Ile Ser Val Ile Asp Leu His Arg	
890	905
gca cag ata cgt gca aaa gta ccg cgc cgc tgg cgc gat aaa gac ctg	3209
Ala Gln Ile Arg Ala Lys Val Pro Arg Arg Trp Arg Asp Lys Asp Leu	
910	920
att ggt tta tat ttc tca tca atg aat att ggc ctg acg caa aga gat	3257
Ile Gly Leu Tyr Phe Ser Ser Met Asn Ile Gly Leu Thr Gln Arg Asp	
925	935
atc tgg cga ttt atg aag gtt tat ttt ggg atg cct tta cgc aaa ata	3305

Ile Trp Arg Phe Met Lys Val Tyr Phe Gly Met Pro Leu Arg Lys Ile	
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Leu Ser Leu Glu Gln Asn Leu Leu Asn Met Ala Ser Val Lys Ala Glu	
955	960 965
cgt att aaa gag cga aca caa cgc aaa gga tta taaaaatatt tattagtagtg	3406
Arg Ile Lys Glu Arg Thr Gln Arg Lys Gly Leu	
970	975 980
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Met Thr Ile Tyr Phe Ile Asn Trp Val Ala Asp	
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Tyr Glu Leu Lys Met Ile Gln Tyr Leu Lys Lys Lys Tyr Lys Ile Lys	
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Asn Ile Thr Thr Pro Lys Lys Tyr Asn Trp Ile Asn Lys Lys Ile	
	1010 1015 1020
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Ser Lys Ile Gly Met Asp Asn Ala Trp Leu Gly Arg Leu Phe Ile	
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Lys His Tyr Leu Asn Asp Ile Lys Lys Asp Asp Ile Ile Ile Ile	
	1040 1045 1050
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Asn Asp Ser Val Val Asn Lys Gly Ile Asn Lys Gln Ile Leu Lys	
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Asn Ile Asn Cys His Lys Val Leu Leu Leu Arg Asn Thr Val Gly	
	1070 1075 1080
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Glu Asp Phe Ile Leu Asp Asn Ala Asn Tyr Phe Asp Ile Ile Tyr	
	1085 1090 1095
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Asp Phe Glu His Arg Phe Ile Gly Asn Glu Lys Ile Lys Ala Ile	
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gaa caa ttt ttt cct ata gga atg gat gaa att aga aat tat agt	3866
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	1115 1120 1125
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Leu Ser Asp Lys Asn Asn Ser Gln Pro Ile Cys Phe Phe Leu Gly	
	1130 1135 1140
cgt gat aaa ggg cgt ctt caa ata att aat gag tta gcc gag aga	3956
Arg Asp Lys Gly Arg Leu Gln Ile Ile Asn Glu Leu Ala Glu Arg	
	1145 1150 1155
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Leu Thr Thr	Leu Gly Cys Lys	Leu Asp Phe Asn Val	Val Lys Asp	
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Lys Thr Ser	Ser Thr Thr Ser	Lys Tyr Leu Ile Glu	Lys Gln Ile	
1175		1180	1185	
tct tat gaa	gag aat att aga	aga aca tta aat gct	aat ata att	4091
Ser Tyr Glu	Glu Asn Ile Arg	Arg Thr Leu Asn Ala	Asn Ile Ile	
1190		1195	1200	
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Val Asp Ile	Thr Lys Glu Asn	Gln Ser Gly Trp Thr	Leu Arg Ile	
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ctt gag gca	cta ttt ttc aat	aaa aaa tta att act	aat aat ata	4181
Leu Glu Ala	Leu Phe Phe Asn	Lys Lys Leu Ile Thr	Asn Asn Ile	
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aat gta ttt	ggg tca gaa atc	tat agt gaa tct cgc	ttt ttt ata	4226
Asn Val Phe	Gly Ser Glu Ile	Tyr Ser Glu Ser Arg	Phe Phe Ile	
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ata ggt cat	gat gat tgg gat	aag tta gag tat ttt	att aac tca	4271
Ile Gly His	Asp Asp Trp Asp	Lys Leu Glu Tyr Phe	Ile Asn Ser	
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Ser Val Lys	Pro Met Asp Tyr	Asp Ser Leu Tyr Lys	Phe Ser Pro	
1265		1270	1275	
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Asp Lys Met	Met Ser Thr Ile	Val Ser Asp Phe Ile	Asp Lys	
1280		1285	1290	
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	Val Ser Phe Thr	Gln Leu Met Arg Val	Ser Met Lys	
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Ile Ala Phe	Ile Gly Glu Ala	Val Ser Gly Phe Gly	Gly Met Glu	
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Thr Val Ile	Arg Asp Val Ile	Thr Thr Phe Arg	Gln Gln His Ile	
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Gln Ser Glu	Met Phe Phe Phe	Cys Arg Asn Asp	Lys Met Asp Lys	
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Gly Trp Leu	Glu Gly Ile Lys	Tyr Ser Cys Ser	Phe Ser Asn Ile	
1350		1355	1360	
cgt tta ggt	ttt ttg cgt cgg	gcg aaa cat att	cat gct cta agt	4635
Arg Leu Gly	Phe Leu Arg Arg	Ala Lys His Ile	His Ala Leu Ser	
1365		1370	1375	
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Lys Trp	Leu Gln Glu Tyr	Gln Pro Asp Ile Val	Ile Cys Ile Asp	
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gtg atc	tcc tgc ctg ttt	gcc gca aaa gca cgt	aaa aaa tca gga	4725
Val Ile	Ser Cys Leu Phe	Ala Ala Lys Ala Arg	Lys Lys Ser Gly	
1395		1400	1405	
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Ile Asp	Met Pro Val Phe	Ser Trp Pro His Phe	Ser Leu Asp His	
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Lys Lys	His Ala Glu Tyr	Ile Thr Cys Ala Asp	Tyr His Leu Ala	
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Ile Ser	Ser Gly Ile Lys	Gln Gln Met Ile Asn	Arg Gly Val Ala	
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Glu Ser	Thr Ile Asn Val	Ile Phe Asn Pro Val	Glu Thr Lys Asp	
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Ser Val	Ile Pro Ala Pro	Glu Glu Gly Glu Thr	Ala Thr Phe Ile	
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Tyr Val	Gly Arg Met Lys	Phe Glu Gly Gln Lys	Arg Val Lys Asp	
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Leu Leu	Asp Gly Leu Ser	Gln Ala Lys Gly Asn	Trp Lys Leu His	
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Val Leu	Gly Asp Gly Ser	Asp Phe Glu Lys Cys	Gln Ala Tyr Gly	
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Arg Glu	Leu Asn Ile Asp	Asp Arg Ile Val Trp	Tyr Gly Trp Gln	
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caa tat	ccc tgg gaa ttg	gtc cag caa gat att	gaa aaa gtg agt	5175
Gln Tyr	Pro Trp Glu Leu	Val Gln Gln Asp Ile	Glu Lys Val Ser	
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gcg tta	ttg ctc acg tca	tct ttt gaa ggt ttc	cca atg acc cta	5220
Ala Leu	Leu Leu Thr Ser	Ser Phe Glu Gly Phe	Pro Met Thr Leu	
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ctt gaa	gcc ttg tcg tgg	ggg att cct tgt atc	agt gcc gat tgt	5265
Leu Glu	Ala Leu Ser Trp	Gly Ile Pro Cys Ile	Ser Ala Asp Cys	
1575		1580	1585	
gtc tcc	ggg cct gct gac	att att caa cct gat	gtc aat ggc cat	5310
Val Ser	Gly Pro Ala Asp	Ile Ile Gln Pro Asp	Val Asn Gly His	
1590		1595	1600	
ctg tat	caa ccg gga gat	att gct ggt ttt gta	act ctt cta aat	5355

Leu Tyr	Gln Pro Gly Asp	Ile	Ala Gly Phe Val	Thr	Leu Leu Asn	
1605		1610		1615		
aaa tat	ata gca ggt gaa	att	cat atc gaa cat	gaa	aaa att cct	5400
Lys Tyr	Ile Ala Gly Glu	Ile	His Ile Glu His	Glu	Lys Ile Pro	
1620		1625		1630		
gcg tcg	atc gat gaa ttt	tac	caa tcg aag tat	tac	gat aga tta	5445
Ala Ser	Ile Asp Glu Phe	Tyr	Gln Ser Lys Tyr	Tyr	Asp Arg Leu	
1635		1640		1645		
cat aag	gta att att tct	gct	att tcc cgg agg	aaa	ta atg cag cag	5492
His Lys	Val Ile Ile Ser	Ala	Ile Ser Arg Arg	Lys	Met Gln Gln	
1650		1655		1660		
gtg ttt	ttc cag gaa act	gag	ttt ctt aat tca	gtt	att gat tat	5537
Val Phe	Phe Gln Glu Thr	Glu	Phe Leu Asn Ser	Val	Ile Asp Tyr	
1665		1670		1675		
gat cat	aaa gta gaa aca	gaa	aat ctt tgt ctg	gac	atc gct tat	5582
Asp His	Lys Val Glu Thr	Glu	Asn Leu Cys Leu	Asp	Ile Ala Tyr	
1680		1685		1690		
gga act	gac aaa aac ttt	cta	ttt ggt tgc gga	att	tcg att gct	5627
Gly Thr	Asp Lys Asn Phe	Leu	Phe Gly Cys Gly	Ile	Ser Ile Ala	
1695		1700		1705		
tca ata	tta aaa tat aat	gaa	gga agt cga ttg	tgt	ttc cat att	5672
Ser Ile	Leu Lys Tyr Asn	Glu	Gly Ser Arg Leu	Cys	Phe His Ile	
1710		1715		1720		
ttt act	gat tat ttt ggt	gat	gat gat cgt aag	tat	ttt gat gcc	5717
Phe Thr	Asp Tyr Phe Gly	Asp	Asp Asp Arg Lys	Tyr	Phe Asp Ala	
1725		1730		1735		
ctg gcg	ttg cag tat aaa	acc	aga att aaa ata	tat	ctg att aat	5762
Leu Ala	Leu Gln Tyr Lys	Thr	Arg Ile Lys Ile	Tyr	Leu Ile Asn	
1740		1745		1750		
ggt gat	cga ctg cgc tca	ttg	cct agc act aag	aat	tgg act cat	5807
Gly Asp	Arg Leu Arg Ser	Leu	Pro Ser Thr Lys	Asn	Trp Thr His	
1755		1760		1765		
gca ata	tat ttt cgt ttt	gtt	att gca gat tac	ttt	att aat aag	5852
Ala Ile	Tyr Phe Arg Phe	Val	Ile Ala Asp Tyr	Phe	Ile Asn Lys	
1770		1775		1780		
gcg cct	aaa gtc ctt tat	ctg	gat gca gat atc	att	tgt cag ggg	5897
Ala Pro	Lys Val Leu Tyr	Leu	Asp Ala Asp Ile	Ile	Cys Gln Gly	
1785		1790		1795		
act att	gag cca cta att	aat	ttc tca ttt cct	gac	gat aaa gtc	5942
Thr Ile	Glu Pro Leu Ile	Asn	Phe Ser Phe Pro	Asp	Asp Lys Val	
1800		1805		1810		
gca atg	gtt gtt aca gaa	ggg	caa gct gac tgg	tgg	gaa aaa cgc	5987
Ala Met	Val Val Thr Glu	Gly	Gln Ala Asp Trp	Trp	Glu Lys Arg	
1815		1820		1825		
gcc cat	tcg tta ggt gtt	gcg	gga att gct aaa	ggt	tac ttt aac	6032

Ala His Ser Leu Gly Val Ala Gly Ile Ala Lys Gly Tyr Phe Asn	
1830 1835 1840	
tcc ggt ttt tta ttg att aat act gcc caa tgg gcg gct cag cag	6077
Ser Gly Phe Leu Leu Ile Asn Thr Ala Gln Trp Ala Ala Gln Gln	
1845 1850 1855	
gtt tct gca cga gct att gca atg cta aat gag cca gaa ata atc	6122
Val Ser Ala Arg Ala Ile Ala Met Leu Asn Glu Pro Glu Ile Ile	
1860 1865 1870	
aaa aaa ata aca cat cct gat cag gat gtg tta aat atg ttg ctg	6167
Lys Lys Ile Thr His Pro Asp Gln Asp Val Leu Asn Met Leu Leu	
1875 1880 1885	
gcg gat aaa ctt att ttc gct gat att aaa tat aac acc cag ttc	6212
Ala Asp Lys Leu Ile Phe Ala Asp Ile Lys Tyr Asn Thr Gln Phe	
1890 1895 1900	
agc tta aat tat caa ctc aaa gaa agc ttt ata aac cca gta acc	6257
Ser Leu Asn Tyr Gln Leu Lys Glu Ser Phe Ile Asn Pro Val Thr	
1905 1910 1915	
aac gat act att ttt atc cat tat atc ggg cca acc aag ccc tgg	6302
Asn Asp Thr Ile Phe Ile His Tyr Ile Gly Pro Thr Lys Pro Trp	
1920 1925 1930	
cat gat tgg gcc tgg gat tat cct gta tca caa gcc ttt atg gag	6347
His Asp Trp Ala Trp Asp Tyr Pro Val Ser Gln Ala Phe Met Glu	
1935 1940 1945	
gca aaa aat gct tgc cca tgg aag aat acg gcg ttg ctg aaa ccg	6392
Ala Lys Asn Ala Ser Pro Trp Lys Asn Thr Ala Leu Leu Lys Pro	
1950 1955 1960	
aac aat agc aat caa tta aga tat agc gca aaa cat atg ctt aaa	6437
Asn Asn Ser Asn Gln Leu Arg Tyr Ser Ala Lys His Met Leu Lys	
1965 1970 1975	
aag cat aga tat cta aaa gga ttt agc aac tat ctt ttt tat ttt	6482
Lys His Arg Tyr Leu Lys Gly Phe Ser Asn Tyr Leu Phe Tyr Phe	
1980 1985 1990	
att gaa aag ata aag cat taa aactgggaaa ctataaagta atgatataag	6533
Ile Glu Lys Ile Lys His	
1995	
ggtagcatt gtg gac tca ttt cct gcc ata gag ata gat aaa gtt aaa	6581
Val Asp Ser Phe Pro Ala Ile Glu Ile Asp Lys Val Lys	
2000 2005 2010	
gcc tgg gat ttt cgg cta gct aat ata aat act tct gaa tgt tta	6626
Ala Trp Asp Phe Arg Leu Ala Asn Ile Asn Thr Ser Glu Cys Leu	
2015 2020 2025	
aat gtt gcc tat ggt gtc gat gct aat tat ctt gat ggt gta ggt	6671
Asn Val Ala Tyr Gly Val Asp Ala Asn Tyr Leu Asp Gly Val Gly	
2030 2035 2040	
gtt tcc atc aca tca att gtc cta aat aat cga cat att aat ctt	6716

Val Ser Ile Thr Ser Ile Val Leu Asn Asn Arg His Ile Asn Leu	
2045 2050 2055	
gat ttt tat att att gct gat gtt tat aat gat ggt ttt ttt caa	6761
Asp Phe Tyr Ile Ile Ala Asp Val Tyr Asn Asp Gly Phe Phe Gln	
2060 2065 2070	
aaa att gca aag ctt gca gag caa aac caa tta aga atc acg tta	6806
Lys Ile Ala Lys Leu Ala Glu Gln Asn Gln Leu Arg Ile Thr Leu	
2075 2080 2085	
tat aga att aac act gat aag ctc cag tgc ttg cct tgt aca cag	6851
Tyr Arg Ile Asn Thr Asp Lys Leu Gln Cys Leu Pro Cys Thr Gln	
2090 2095 2100	
gtc tgg tca aga gca atg tac ttc cgt tta ttt gca ttt caa tta	6896
Val Trp Ser Arg Ala Met Tyr Phe Arg Leu Phe Ala Phe Gln Leu	
2105 2110 2115	
ttg ggt tta acg ctt gat cgt ttg ctt tat ctt gat gca gat gtt	6941
Leu Gly Leu Thr Leu Asp Arg Leu Leu Tyr Leu Asp Ala Asp Val	
2120 2125 2130	
gtt tgt aaa ggc gat att agc caa cta tta cat ctg ggt tta aat	6986
Val Cys Lys Gly Asp Ile Ser Gln Leu Leu His Leu Gly Leu Asn	
2135 2140 2145	
gga gcg gtt gct gct gtt gtt aaa gat gtt gag cca atg caa gaa	7031
Gly Ala Val Ala Ala Val Val Lys Asp Val Glu Pro Met Gln Glu	
2150 2155 2160	
aag gcg gta tcc agg ttg tct gat cct gaa tta ctt ggg cag tac	7076
Lys Ala Val Ser Arg Leu Ser Asp Pro Glu Leu Leu Gly Gln Tyr	
2165 2170 2175	
ttt aat tcc ggt gtc gtt tat tta gac tta aaa aaa tgg gct gac	7121
Phe Asn Ser Gly Val Val Tyr Leu Asp Leu Lys Lys Trp Ala Asp	
2180 2185 2190	
gca aaa cta aca gaa aaa gcg ttg tct att ctt atg agt aaa gat	7166
Ala Lys Leu Thr Glu Lys Ala Leu Ser Ile Leu Met Ser Lys Asp	
2195 2200 2205	
aat gtt tat aaa tac cct gat cag gat gtt atg aat gtc tta ctg	7211
Asn Val Tyr Lys Tyr Pro Asp Gln Asp Val Met Asn Val Leu Leu	
2210 2215 2220	
aaa ggg atg aca tta ttt ttg cct cgt gag tac aat aca att tat	7256
Lys Gly Met Thr Leu Phe Leu Pro Arg Glu Tyr Asn Thr Ile Tyr	
2225 2230 2235	
aca att aaa agt gaa tta aaa gac aaa aca cat caa aac tat aaa	7301
Thr Ile Lys Ser Glu Leu Lys Asp Lys Thr His Gln Asn Tyr Lys	
2240 2245 2250	
aag ctg att aca gaa agt act ctt ctt att cat tat aca ggt gca	7346
Lys Leu Ile Thr Glu Ser Thr Leu Leu Ile His Tyr Thr Gly Ala	
2255 2260 2265	
act aaa ccg tgg cac aaa tgg gca att tat cca tcg gta aaa tac	7391

Thr Lys Pro Trp His Lys Trp Ala Ile Tyr Pro Ser Val Lys Tyr  
 2270 2275 2280  
 tat aaa ata gct tta gaa aat tcc ccc tgg aaa gat gac tct cca 7436  
 Tyr Lys Ile Ala Leu Glu Asn Ser Pro Trp Lys Asp Asp Ser Pro  
 2285 2290 2295  
 cga gat gcg aaa tca att att gaa ttt aaa aaa gat ata aac atc 7481  
 Arg Asp Ala Lys Ser Ile Ile Glu Phe Lys Lys Asp Ile Asn Ile  
 2300 2305 2310  
 ttt tag tgcaacatca tt 7499  
 Phe

<210> 106 <211> 344 <212> PRT <213> Escherichia coli <400> 106

Met Arg Tyr His Gly Asp Met Leu Leu Thr Thr Pro Val Ile Ser Thr  
 1 5 10 15  
 Leu Lys Gln Asn Tyr Pro Asp Ala Lys Ile Asp Met Leu Leu Tyr Gln  
 20 25 30  
 Asp Thr Ile Pro Ile Leu Ser Glu Asn Pro Glu Ile Asn Ala Leu Tyr  
 35 40 45  
 Gly Ile Ser Asn Lys Gly Ala Gly Thr Phe Asp Lys Ile Lys Asn Val  
 50 55 60  
 Leu Ser Leu Ile Lys Thr Leu Arg Ala Asn Asn Tyr Asp Leu Val Ile  
 65 70 75 80  
 Asn Leu Thr Asp Gln Trp Met Val Ala Leu Leu Val Arg Cys Leu Pro  
 85 90 95  
 Ala Arg Met Lys Ile Ser Gln Leu Tyr Gly His Arg Gln His Gly Ile  
 100 105 110  
 Trp Lys Lys Ser Phe Thr His Leu Ala Pro Ile His Gly Thr His Ile  
 115 120 125  
 Val Glu Arg Asn Leu Ser Val Leu Glu Pro Leu Gly Ile Thr Asp Phe  
 130 135 140  
 Tyr Thr Asp Thr Thr Met Ser Tyr Ala Glu Asp Cys Trp Lys Lys Met  
 145 150 155 160  
 Arg Arg Glu Leu Asp Ala Leu Gly Val Lys Asp His Tyr Val Val Ile  
 165 170 175

Gln Pro Thr Ala Arg Gln Ile Phe Lys Cys Trp Asp Asn Asp Lys Phe  
180 185 190

Ser Lys Val Ile Asp Ala Leu Gln Gln Arg Gly Tyr Gln Val Val Leu  
195 200 205

Thr Cys Gly Pro Ser Ala Asp Asp Leu Ala Cys Val Asp Glu Ile Ala  
210 215 220

Arg Gly Cys Glu Thr Lys Pro Ile Thr Gly Leu Ala Gly Lys Thr Arg  
225 230 235 240

Phe Pro Glu Leu Gly Ala Leu Ile Asp His Ala Val Leu Phe Ile Gly  
245 250 255

Val Asp Ser Ala Pro Gly His Ile Ala Ala Ala Val Lys Thr Pro Val  
260 265 270

Ile Ser Leu Phe Gly Ala Thr Asp His Val Phe Trp Arg Pro Trp Thr  
275 280 285

Glu Asn Ile Ile Gln Phe Trp Ala Gly Asn Tyr Gln Lys Met Pro Thr  
290 295 300

Arg His Glu Leu Asp Arg Asn Lys Lys Tyr Leu Ser Val Ile Pro Ala  
305 310 315 320

Glu Asp Val Ile Ala Ala Thr Glu Lys Leu Leu Pro Glu Asp Ala Pro  
325 330 335

Ser Ala Asp Arg Asn Ala Gln Leu  
340

<210> 107 <211> 371 <212> PRT <213> Escherichia coli <400> 107

Ile Val Ala Phe Cys Leu Tyr Lys Tyr Phe Pro Phe Gly Gly Leu Gln  
1 5 10 15

Arg Asp Phe Met Arg Ile Ala Ser Thr Val Ala Ala Arg Gly His His  
20 25 30

Val Arg Val Tyr Thr Gln Ser Trp Glu Gly Asp Cys Pro Lys Ala Phe  
35 40 45

*(The following information was obtained from the records of the Federal Bureau of Investigation, Department of Justice.)*

Ala Glu Tyr Tyr Ala Trp Val Gln Asn His Leu Lys Glu His Pro Ala  
65 70 75 80

Asp Arg Val Val Gly Phe Asn Lys Met Pro Gly Leu Asp Val Tyr Phe  
85 90 95

Ala Ala Asp Val Cys Tyr Ala Glu Lys Val Ala Gln Glu Lys Gly Phe  
100 105 110

Leu Tyr Arg Leu Thr Ser Arg Tyr Arg His Tyr Ala Ala Phe Glu Arg  
115 120 125

Ala Thr Phe Glu Gln Gly Lys Ser Thr Lys Leu Met Met Leu Thr Asp  
130 135 140

Lys Gln Ile Ala Asp Phe Gln Lys His Tyr Gln Thr Glu Pro Glu Arg  
145 150 155 160

Phe Gln Ile Leu Pro Pro Gly Ile Tyr Pro Asp Arg Lys Tyr Ser Glu  
165 170 175

Gln Ile Pro Asn Ser Arg Glu Ile Tyr Arg Gln Lys Asn Gly Ile Lys  
180 185 190

Glu Gln Gln Asn Leu Leu Leu Gln Val Gly Ser Asp Phe Gly Arg Lys  
195 200 205

Gly Val Asp Arg Ser Ile Glu Ala Leu Ala Ser Leu Pro Glu Ser Leu  
210 215 220

Arg His Asn Thr Leu Leu Phe Val Val Gly Gln Asp Lys Pro Arg Lys  
225 230 235 240

Phe Glu Ala Leu Ala Glu Lys Leu Gly Val Arg Ser Asn Val His Phe  
245 250 255

Phe Ser Gly Arg Asn Asp Val Ser Glu Leu Met Ala Ala Ala Asp Leu  
260 265 270

Leu Leu His Pro Ala Tyr Gln Glu Ala Ala Gly Ile Val Leu Leu Glu  
275 280 285

Ala Ile Thr Ala Gly Leu Pro Val Leu Thr Thr Ala Val Cys Gly Tyr  
290 295 300

Ala His Tyr Ile Ala Asp Ala Asn Cys Gly Thr Val Ile Ala Glu Pro  
305 310 315 320

Phe Ser Gln Glu Gln Leu Asn Glu Val Leu Arg Lys Ala Leu Thr Gln  
325 330 335

Ser Pro Leu Arg Met Ala Trp Ala Glu Asn Ala Arg His Tyr Ala Asp  
340 345 350

Thr Gln Asp Leu Tyr Ser Leu Pro Glu Lys Ala Ala Asp Ile Ile Thr  
355 360 365

Gly Gly Leu  
370

<210> 108 <211> 265 <212> PRT <213> Escherichia coli <400> 108

Met Val Glu Leu Lys Glu Pro Leu Ala Thr Leu Trp Arg Gly Lys Asp  
1 5 10 15

Ala Phe Ala Glu Val Lys Lys Leu Asn Gly Glu Val Phe Arg Glu Leu  
20 25 30

Glu Thr Arg Arg Thr Leu Arg Phe Glu Leu Ser Gly Lys Ser Tyr Phe  
35 40 45

Leu Lys Trp His Lys Gly Thr Thr Leu Lys Glu Ile Ile Lys Asn Leu  
50 55 60

Leu Ser Leu Arg Met Pro Val Leu Gly Ala Asp Arg Glu Trp His Ala  
65 70 75 80

Ile His Arg Leu Ser Asp Val Gly Val Asp Thr Met Lys Gly Ile Gly  
85 90 95

Phe Gly Glu Lys Gly Leu Asn Pro Leu Thr Arg Ala Ser Phe Ile Ile  
100 105 110

Thr Glu Asp Leu Thr Pro Thr Ile Ser Leu Glu Asp Tyr Cys Ala Asp  
115 120 125

Trp Ala Val Asn Pro Pro Asp Ile Arg Val Lys Arg Met Leu Ile Ala  
130 135 140



**POLYMER LETTERS**

Leu Arg Asn Thr Val Gly Glu Asp Phe Ile Leu Asp Asn Ala Asn Tyr  
 100 105 110

Phe Asp Ile Ile Tyr Asp Phe Glu His Arg Phe Ile Gly Asn Glu Lys  
 115 120 125

Ile Lys Ala Ile Glu Gln Phe Phe Pro Ile Gly Met Asp Glu Ile Arg  
 130 135 140

Asn Tyr Ser Leu Ser Asp Lys Asn Asn Ser Gln Pro Ile Cys Phe Phe  
 145 150 155 160

Leu Gly Arg Asp Lys Gly Arg Leu Gln Ile Ile Asn Glu Leu Ala Glu  
 165 170 175

Arg Leu Thr Thr Leu Gly Cys Lys Leu Asp Phe Asn Val Val Lys Asp  
 180 185 190

Lys Thr Ser Ser Thr Thr Ser Lys Tyr Leu Ile Glu Lys Gln Ile Ser  
 195 200 205

Tyr Glu Glu Asn Ile Arg Arg Thr Leu Asn Ala Asn Ile Ile Val Asp  
 210 215 220

Ile Thr Lys Glu Asn Gln Ser Gly Trp Thr Leu Arg Ile Leu Glu Ala  
 225 230 235 240

Leu Phe Phe Asn Lys Lys Leu Ile Thr Asn Asn Ile Asn Val Phe Gly  
 245 250 255

Ser Glu Ile Tyr Ser Glu Ser Arg Phe Phe Ile Ile Gly His Asp Asp  
 260 265 270

Trp Asp Lys Leu Glu Tyr Phe Ile Asn Ser Ser Val Lys Pro Met Asp  
 275 280 285

Tyr Asp Ser Leu Tyr Lys Phe Ser Pro Asp Lys Met Met Ser Thr Ile  
 290 295 300

Val Ser Asp Phe Ile Asp Lys  
 305 310

<210> 110 <211> 369 <212> PRT <213> Escherichia coli <400> 110

Val Ser Phe Thr Gln Leu Met Arg Val Ser Met Lys Ile Ala Phe Ile  
 1 5 10 15



00751708 040000

Gly Glu Ala Val Ser Gly Phe Gly Gly Met Glu Thr Val Ile Arg Asp  
20 25 30

Val Ile Thr Thr Phe Arg Gln Gln His Ile Gln Ser Glu Met Phe Phe  
35 40 45

Phe Cys Arg Asn Asp Lys Met Asp Lys Gly Trp Leu Glu Gly Ile Lys  
50 55 60

Tyr Ser Cys Ser Phe Ser Asn Ile Arg Leu Gly Phe Leu Arg Arg Ala  
65 70 75 80

Lys His Ile His Ala Leu Ser Lys Trp Leu Gln Glu Tyr Gln Pro Asp  
85 90 95

Ile Val Ile Cys Ile Asp Val Ile Ser Cys Leu Phe Ala Ala Lys Ala  
100 105 110

Arg Lys Lys Ser Gly Ile Asp Met Pro Val Phe Ser Trp Pro His Phe  
115 120 125

Ser Leu Asp His Lys Lys His Ala Glu Tyr Ile Thr Cys Ala Asp Tyr  
130 135 140

His Leu Ala Ile Ser Ser Gly Ile Lys Gln Gln Met Ile Asn Arg Gly  
145 150 155 160

Val Ala Glu Ser Thr Ile Asn Val Ile Phe Asn Pro Val Glu Thr Lys  
165 170 175

Asp Ser Val Ile Pro Ala Pro Glu Glu Gly Glu Thr Ala Thr Phe Ile  
180 185 190

Tyr Val Gly Arg Met Lys Phe Glu Gly Gln Lys Arg Val Lys Asp Leu  
195 200 205

Leu Asp Gly Leu Ser Gln Ala Lys Gly Asn Trp Lys Leu His Val Leu  
210 215 220

Gly Asp Gly Ser Asp Phe Glu Lys Cys Gln Ala Tyr Gly Arg Glu Leu  
225 230 235 240

Asn Ile Asp Asp Arg Ile Val Trp Tyr Gly Trp Gln Gln Tyr Pro Trp  
245 250 255

Glu Leu Val Gln Gln Asp Ile Glu Lys Val Ser Ala Leu Leu Leu Thr  
 260 265 270

Ser Ser Phe Glu Gly Phe Pro Met Thr Leu Leu Glu Ala Leu Ser Trp  
 275 280 285

Gly Ile Pro Cys Ile Ser Ala Asp Cys Val Ser Gly Pro Ala Asp Ile  
 290 295 300

Ile Gln Pro Asp Val Asn Gly His Leu Tyr Gln Pro Gly Asp Ile Ala  
 305 310 315 320

Gly Phe Val Thr Leu Leu Asn Lys Tyr Ile Ala Gly Glu Ile His Ile  
 325 330 335

Glu His Glu Lys Ile Pro Ala Ser Ile Asp Glu Phe Tyr Gln Ser Lys  
 340 345 350

Tyr Tyr Asp Arg Leu His Lys Val Ile Ile Ser Ala Ile Ser Arg Arg  
 355 360 365

Lys

<210> 111 <211> 339 <212> PRT <213> Escherichia coli <400> 111

Met Gln Gln Val Phe Phe Gln Glu Thr Glu Phe Leu Asn Ser Val Ile  
 1 5 10 15

Asp Tyr Asp His Lys Val Glu Thr Glu Asn Leu Cys Leu Asp Ile Ala  
 20 25 30

Tyr Gly Thr Asp Lys Asn Phe Leu Phe Gly Cys Gly Ile Ser Ile Ala  
 35 40 45

Ser Ile Leu Lys Tyr Asn Glu Gly Ser Arg Leu Cys Phe His Ile Phe  
 50 55 60

Thr Asp Tyr Phe Gly Asp Asp Asp Arg Lys Tyr Phe Asp Ala Leu Ala  
 65 70 75 80

Leu Gln Tyr Lys Thr Arg Ile Lys Ile Tyr Leu Ile Asn Gly Asp Arg  
 85 90 95

Leu Arg Ser Leu Pro Ser Thr Lys Asn Trp Thr His Ala Ile Tyr Phe  
 100 105 110

Arg Phe Val Ile Ala Asp Tyr Phe Ile Asn Lys Ala Pro Lys Val Leu  
 115 120 125

Tyr Leu Asp Ala Asp Ile Ile Cys Gln Gly Thr Ile Glu Pro Leu Ile  
 130 135 140

Asn Phe Ser Phe Pro Asp Asp Lys Val Ala Met Val Val Thr Glu Gly  
 145 150 155 160

Gln Ala Asp Trp Trp Glu Lys Arg Ala His Ser Leu Gly Val Ala Gly  
 165 170 175

Ile Ala Lys Gly Tyr Phe Asn Ser Gly Phe Leu Leu Ile Asn Thr Ala  
 180 185 190

Gln Trp Ala Ala Gln Gln Val Ser Ala Arg Ala Ile Ala Met Leu Asn  
 195 200 205

Glu Pro Glu Ile Ile Lys Lys Ile Thr His Pro Asp Gln Asp Val Leu  
 210 215 220

Asn Met Leu Leu Ala Asp Lys Leu Ile Phe Ala Asp Ile Lys Tyr Asn  
 225 230 235 240

Thr Gln Phe Ser Leu Asn Tyr Gln Leu Lys Glu Ser Phe Ile Asn Pro  
 245 250 255

Val Thr Asn Asp Thr Ile Phe Ile His Tyr Ile Gly Pro Thr Lys Pro  
 260 265 270

Trp His Asp Trp Ala Trp Asp Tyr Pro Val Ser Gln Ala Phe Met Glu  
 275 280 285

Ala Lys Asn Ala Ser Pro Trp Lys Asn Thr Ala Leu Leu Lys Pro Asn  
 290 295 300

Asn Ser Asn Gln Leu Arg Tyr Ser Ala Lys His Met Leu Lys Lys His  
 305 310 315 320

Arg Tyr Leu Lys Gly Phe Ser Asn Tyr Leu Phe Tyr Phe Ile Glu Lys  
 325 330 335

Ile Lys His

<210> 112 <211> 314 <212> PRT <213> Escherichia coli <400> 112

Val Asp Ser Phe Pro Ala Ile Glu Ile Asp Lys Val Lys Ala Trp Asp  
1 5 10 15

Phe Arg Leu Ala Asn Ile Asn Thr Ser Glu Cys Leu Asn Val Ala Tyr  
20 25 30

Gly Val Asp Ala Asn Tyr Leu Asp Gly Val Gly Val Ser Ile Thr Ser  
35 40 45

Ile Val Leu Asn Asn Arg His Ile Asn Leu Asp Phe Tyr Ile Ile Ala  
50 55 60

Asp Val Tyr Asn Asp Gly Phe Phe Gln Lys Ile Ala Lys Leu Ala Glu  
65 70 75 80

Gln Asn Gln Leu Arg Ile Thr Leu Tyr Arg Ile Asn Thr Asp Lys Leu  
85 90 95

Gln Cys Leu Pro Cys Thr Gln Val Trp Ser Arg Ala Met Tyr Phe Arg  
100 105 110

Leu Phe Ala Phe Gln Leu Leu Gly Leu Thr Leu Asp Arg Leu Leu Tyr  
115 120 125

Leu Asp Ala Asp Val Val Cys Lys Gly Asp Ile Ser Gln Leu Leu His  
130 135 140

Leu Gly Leu Asn Gly Ala Val Ala Ala Val Val Lys Asp Val Glu Pro  
145 150 155 160

Met Gln Glu Lys Ala Val Ser Arg Leu Ser Asp Pro Glu Leu Leu Gly  
165 170 175

Gln Tyr Phe Asn Ser Gly Val Val Tyr Leu Asp Leu Lys Lys Trp Ala  
180 185 190

Asp Ala Lys Leu Thr Glu Lys Ala Leu Ser Ile Leu Met Ser Lys Asp  
195 200 205

Asn Val Tyr Lys Tyr Pro Asp Gln Asp Val Met Asn Val Leu Leu Lys  
210 215 220



Gly Met Thr Leu Phe Leu Pro Arg Glu Tyr Asn Thr Ile Tyr Thr Ile  
225 230 235 240

Lys Ser Glu Leu Lys Asp Lys Thr His Gln Asn Tyr Lys Lys Leu Ile  
245 250 255

Thr Glu Ser Thr Leu Leu Ile His Tyr Thr Gly Ala Thr Lys Pro Trp  
260 265 270

His Lys Trp Ala Ile Tyr Pro Ser Val Lys Tyr Tyr Lys Ile Ala Leu  
275 280 285

Glu Asn Ser Pro Trp Lys Asp Asp Ser Pro Arg Asp Ala Lys Ser Ile  
290 295 300

Ile Glu Phe Lys Lys Asp Ile Asn Ile Phe  
305 310

<210> 113 <211> 8391 <212> DNA <213> Mycobacterium bovis <220>  
<221> CDS <222> (1)..(8391) <223>

<400> 113  
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Met Gly Thr Arg Thr Gly Gly Arg Gly Pro Gly Ser Val Arg Gln Ala  
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cct gac gtc ggc cgc cgt gtc ggt gcc cgg cgt gtt gct tac cca gat 96  
Pro Asp Val Gly Arg Arg Val Gly Ala Arg Arg Val Ala Tyr Pro Asp  
20 25 30  
cgc ggc gac ccg ggc gct ggc ccg tca agg cat gga cct cgt ggc cac 144  
Arg Gly Asp Pro Gly Ala Gly Pro Ser Arg His Gly Pro Arg Gly His  
35 40 45  
ccc gcc ggt cgc cat ggc ggg cat tcg caa ggt gtg ctg gcg gtg gaa 192  
Pro Ala Gly Arg His Gly Gly His Ser Gln Gly Val Leu Ala Val Glu  
50 55 60  
gcc ctc aag gct ggt ggg gca cgc gac gtc gag ctg ttt gcc ttg gcc 240  
Ala Leu Lys Ala Gly Gly Ala Arg Asp Val Glu Leu Phe Ala Leu Ala  
65 70 75 80  
cag ttg atc ggt gcc gcc gga acg ctg gtg gcc cgc cgg cgc gaa ttt 288  
Gln Leu Ile Gly Ala Ala Gly Thr Leu Val Ala Arg Arg Arg Glu Phe  
85 90 95  
ccg tcc tgg gcg atc gcg ccg atg gta tcg gtc acc aac gcc gac ccc 336  
Pro Ser Trp Ala Ile Ala Pro Met Val Ser Val Thr Asn Ala Asp Pro  
100 105 110  
gag cgc atc gcc cgg ttg ctc gac gag ttc gcc cag gac gtg cgc acg 384  
Glu Arg Ile Gly Arg Leu Leu Asp Glu Phe Ala Gln Asp Val Arg Thr

SECRET

115				120				125								
gtg	ctg	cca	ccg	gtg	ttg	tcc	atc	cgc	aac	ggc	ccg	cgt	gcc	gtc	gtc	432
Val	Leu	Pro	Pro	Val	Leu	Ser	Ile	Arg	Asn	Gly	Arg	Arg	Ala	Val	Val	
130				135				140								
atc	acc	ggc	acc	ccc	gag	cag	ctg	tcg	cgt	ttc	gag	ctt	tat	tgc	cgc	480
Ile	Thr	Gly	Thr	Pro	Glu	Gln	Leu	Ser	Arg	Phe	Glu	Leu	Tyr	Cys	Arg	
145				150				155				160				
cag	atc	tcc	gag	aag	gaa	gaa	gcc	gac	cgc	aag	aac	aag	gtc	cgc	ggc	528
Gln	Ile	Ser	Glu	Lys	Glu	Glu	Ala	Asp	Arg	Lys	Asn	Lys	Val	Arg	Gly	
165				170				175								
ggc	gac	gtc	ttc	tcg	ccg	gtc	ttc	gag	ccg	gtg	cag	gtg	gag	gtg	ggc	576
Gly	Asp	Val	Phe	Ser	Pro	Val	Phe	Glu	Pro	Val	Gln	Val	Glu	Val	Gly	
180				185				190								
ttt	cac	acc	ccg	cgg	cta	tcc	gac	ggg	atc	gac	atc	gtc	gcg	ggc	tgg	624
Phe	His	Thr	Pro	Arg	Leu	Ser	Asp	Gly	Ile	Asp	Ile	Val	Ala	Gly	Trp	
195				200				205								
gcc	gag	aag	gcg	ggc	ctc	gat	gtc	gcc	ttg	gct	ccg	gag	ctg	gcc	gat	672
Ala	Glu	Lys	Ala	Gly	Leu	Asp	Val	Ala	Leu	Ala	Arg	Glu	Leu	Ala	Asp	
210				215				220								
gcc	atc	ttg	atc	aga	aag	gtc	gac	tgg	gtc	gac	gag	atc	acc	cgt	gtc	720
Ala	Ile	Leu	Ile	Arg	Lys	Val	Asp	Trp	Val	Asp	Glu	Ile	Thr	Arg	Val	
225				230				235								
cac	cgg	gcc	ggc	gcc	cgc	tgg	atc	ctc	gac	ctg	ggg	ccg	ggc	gac	atc	768
His	Arg	Ala	Gly	Ala	Arg	Trp	Ile	Leu	Asp	Leu	Gly	Pro	Gly	Asp	Ile	
245				250				255								
ctg	acc	cga	ctg	acc	gca	ccg	gtg	atc	cgc	ggc	ctg	ggc	atc	ggc	atc	816
Leu	Thr	Arg	Leu	Thr	Ala	Pro	Val	Ile	Arg	Gly	Leu	Gly	Ile	Gly	Ile	
260				265				270								
gtg	ccg	gcg	cgt	acc	cgc	ggt	ggc	cag	cgc	aac	ctg	ttc	acc	gtc	ggc	864
Val	Pro	Ala	Arg	Thr	Arg	Gly	Gly	Gln	Arg	Asn	Leu	Phe	Thr	Val	Gly	
275				280				285								
gcc	acc	ccc	gag	gtt	gcc	cgg	gcc	tgg	tcg	agc	tac	gca	ccg	acc	gtg	912
Ala	Thr	Pro	Glu	Val	Ala	Arg	Ala	Trp	Ser	Ser	Tyr	Ala	Pro	Thr	Val	
290				295				300								
gtt	cgc	ctc	ccc	gac	ggc	agg	gtc	aag	ctc	tcg	acg	aag	ttc	acc	cgg	960
Val	Arg	Leu	Pro	Asp	Gly	Arg	Val	Lys	Leu	Ser	Thr	Lys	Phe	Thr	Arg	
305				310				315				320				
ctg	acc	cgc	cgc	tcg	ccg	atc	ctg	ctc	gcg	ggc	atg	acc	ccg	acc	acc	1008
Leu	Thr	Arg	Arg	Ser	Pro	Ile	Leu	Leu	Ala	Gly	Met	Thr	Pro	Thr	Thr	
325				330				335								
gtg	gac	gcc	aag	atc	gtc	gcc	gcg	gcg	gcc	aac	ggc	cgg	cac	tgg	gcc	1056
Val	Asp	Ala	Lys	Ile	Val	Ala	Ala	Ala	Ala	Asn	Gly	Arg	His	Trp	Ala	
340				345				350								
gag	ctg	gcg	gcg	cgg	ggc	agg	tca	ccg	aag	aga	tct	tcg	gta	acc	gca	1104
Glu	Leu	Ala	Ala	Arg	Gly	Arg	Ser	Pro	Lys	Arg	Ser	Ser	Val	Thr	Ala	

355										360										365										
tcg	aac	aaa	tgg	ccg	gcc	tgc	tcg	agc	cgg	gcc	gca	cct	atc	agt	tca		1152													
Ser	Asn	Lys	Trp	Pro	Ala	Cys	Ser	Ser	Arg	Ala	Ala	Pro	Ile	Ser	Ser															
370						375					380																			
acg	cgc	tgt	tcc	tcg	atc	cct	acc	tgt	gaa	gct	tca	ggt	ggg	cgg	caa		1200													
Thr	Arg	Cys	Ser	Ser	Ile	Pro	Thr	Cys	Glu	Ala	Ser	Gly	Gly	Arg	Gln															
385					390					395					400															
gcg	gtt	ggt	gca	gaa	ggc	ccg	cca	gtc	cgg	cgc	cgc	gat	cga	cgg	cgt		1248													
Ala	Val	Gly	Ala	Glu	Gly	Pro	Pro	Val	Arg	Arg	Arg	Asp	Arg	Arg	Arg															
				405					410					415																
ggt	gat	cag	cgc	cgg	cat	ccc	aga	cct	cga	cga	ggc	cgt	cga	gct	gat		1296													
Gly	Asp	Gln	Arg	Arg	His	Pro	Arg	Pro	Arg	Arg	Gly	Arg	Arg	Ala	Asp															
			420					425					430																	
cga	cga	act	ggg	cga	cat	cgg	cat	cag	cca	cgt	cgt	gtt	caa	acc	cgg		1344													
Arg	Arg	Thr	Gly	Arg	His	Arg	His	Gln	Pro	Arg	Arg	Val	Gln	Thr	Arg															
			435				440					445																		
gac	cat	cga	gca	gat	ccg	ctc	ggg	gat	tcg	cat	cgc	cac	cga	ggt	gcc		1392													
Asp	His	Arg	Ala	Asp	Pro	Leu	Gly	Asp	Ser	His	Arg	His	Arg	Gly	Ala															
	450					455					460																			
cac	caa	gcc	ggt	gat	cat	gca	cgt	cga	ggg	ccg	ggc	gcg	ccg	gcg	ggc		1440													
His	Gln	Ala	Gly	Asp	His	Ala	Arg	Arg	Gly	Pro	Gly	Ala	Pro	Ala	Gly															
465					470					475					480															
acc	att	cct	ggg	agg	atc	tca	cac	ctg	ctg	ctg	gct	acc	tac	tcg	gca		1488													
Thr	Ile	Pro	Gly	Arg	Ile	Ser	His	Leu	Leu	Leu	Ala	Thr	Tyr	Ser	Ala															
				485					490					495																
gat	cgg	gca	ccg	cgc	caa	cat	cac	gtg	tgc	gtc	ggc	ggc	ggc	cat	ctc		1536													
Asp	Arg	Ala	Pro	Arg	Gln	His	His	Val	Cys	Val	Gly	Gly	Gly	His	Leu															
			500					505					510																	
ggc	acc	ccg	aag	aag	ggc	tgc	gga	tat	ttg	tcc	ggg	cct	ggg	cgc	agc		1584													
Gly	Thr	Pro	Lys	Lys	Gly	Cys	Gly	Tyr	Leu	Ser	Gly	Pro	Gly	Arg	Ser															
		515					520					525																		
gta	cgg	ctt	ccc	att	gat	gcc	gat	cga	cgc	atc	ctg	gtc	ggc	acc	gcg		1632													
Val	Arg	Leu	Pro	Ile	Asp	Ala	Asp	Arg	Arg	Ile	Leu	Val	Gly	Thr	Ala															
	530					535					540																			
gcg	atg	gcc	acc	aag	gaa	tcc	acc	acg	tcg	cca	tcg	gtc	aag	cgg	atg		1680													
Ala	Met	Ala	Thr	Lys	Glu	Ser	Thr	Thr	Ser	Pro	Ser	Val	Lys	Arg	Met															
545					550					555					560															
ctc	gtc	gac	act	cag	ggc	acc	gac	caa	tgg	atc	agc	gcc	gga	aaa	gcg		1728													
Leu	Val	Asp	Thr	Gln	Gly	Thr	Asp	Gln	Trp	Ile	Ser	Ala	Gly	Lys	Ala															
				565					570					575																
cag	ggc	cgc	atg	cct	cca	gcc	gag	tca	gct	cgg	tgc	cga	cat	cca	cga		1776													
Gln	Gly	Arg	Met	Pro	Pro	Ala	Glu	Ser	Ala	Arg	Cys	Arg	His	Pro	Arg															
			580					585					590																	
gat	cga	cac	agc	gca	tcc	gtg	cgg	cgc	tgc	tcg	acg	agg	tgg	ccg	gtg		1824													
Asp	Arg	His	Ser	Ala	Ser	Val	Arg	Arg	Cys	Ser	Thr	Arg	Trp	Pro	Val															

595					600					605						
acg	cg	agg	cg	tcg	cg	agc	gtc	gca	tgg	cca	aga	ccg	cca	agc	cct	1872
Thr	Arg	Arg	Ala	Ser	Arg	Ser	Val	Ala	Trp	Pro	Arg	Pro	Pro	Ser	Pro	
610						615					620					
act	tgc	cga	cgt	cgc	cga	cat	gac	cta	cct	gca	gtg	gct	gcg	ggc	gct	1920
Thr	Cys	Arg	Arg	Arg	Arg	His	Asp	Leu	Pro	Ala	Val	Ala	Ala	Gly	Ala	
625					630					635					640	
acg	tcg	aac	tgg	cca	tcg	ggg	aag	gca	act	cga	ccg	ccg	aca	ccg	cct	1968
Thr	Ser	Asn	Trp	Pro	Ser	Gly	Lys	Ala	Thr	Arg	Pro	Pro	Thr	Pro	Pro	
				645					650					655		
cg	tgg	gca	gcc	cgt	ggc	tgg	ccg	aca	ctg	gcg	gga	ccg	ctt	cga	gca	2016
Arg	Trp	Ala	Ala	Arg	Gly	Trp	Pro	Thr	Leu	Ala	Gly	Pro	Leu	Arg	Ala	
			660					665					670			
gat	gct	gca	gcg	tgc	cga	agc	ccg	gtt	gca	ccc	aca	gga	ttt	cg	ccc	2064
Asp	Ala	Ala	Ala	Cys	Arg	Ser	Pro	Val	Ala	Pro	Thr	Gly	Phe	Arg	Pro	
			675				680						685			
gat	cca	gac	gct	att	cac	cga	tgc	tgg	cct	gct	gga	caa	tcc	gca	gca	2112
Asp	Pro	Asp	Ala	Ile	His	Arg	Cys	Trp	Pro	Ala	Gly	Gln	Ser	Ala	Ala	
			690			695					700					
gcg	atc	gcc	gcc	ctc	gtg	gcg	cgc	tac	ccc	gac	gcc	gag	acc	gtg	cag	2160
Ala	Ile	Ala	Ala	Leu	Val	Ala	Arg	Tyr	Pro	Asp	Ala	Glu	Thr	Val	Gln	
705				710					715						720	
ttg	cat	ccc	gcg	gat	gtg	ccc	ttt	ttc	gtg	acg	ttg	tgc	aag	acg	ctg	2208
Leu	His	Pro	Ala	Asp	Val	Pro	Phe	Phe	Val	Thr	Leu	Cys	Lys	Thr	Leu	
				725					730						735	
ggc	aag	ccg	gtc	aac	ttc	gtg	ccg	gcg	atc	gac	ctc	gtc	gtg	cgc	gct	2256
Gly	Lys	Pro	Val	Asn	Phe	Val	Pro	Ala	Ile	Asp	Leu	Val	Val	Arg	Ala	
			740					745					750			
ggt	ggc	gca	gcg	act	cgc	tgt	ggc	agg	ccc	acg	acg	ccc	gct	acg	acg	2304
Gly	Gly	Ala	Ala	Thr	Arg	Cys	Gly	Arg	Pro	Thr	Thr	Pro	Ala	Thr	Thr	
			755				760					765				
ccg	atg	cg	tgt	gca	tca	ttc	cg	gca	cgc	gtc	ggt	agc	cgc	atc	acc	2352
Pro	Met	Arg	Cys	Ala	Ser	Phe	Arg	Ala	Arg	Val	Gly	Ser	Arg	Ile	Thr	
			770			775					780					
cg	atg	gat	gaa	ccc	gtc	ggt	gag	ttg	ctg	gac	gct	ttc	gag	caa	gcc	2400
Arg	Met	Asp	Glu	Pro	Val	Gly	Glu	Leu	Leu	Asp	Ala	Phe	Glu	Gln	Ala	
785				790						795					800	
gca	atc	gat	gaa	gtg	ctc	ggc	gcc	ggt	gtc	gag	ccg	aag	gat	gtc	gcg	2448
Ala	Ile	Asp	Glu	Val	Leu	Gly	Ala	Gly	Val	Glu	Pro	Lys	Asp	Val	Ala	
				805				810						815		
tcc	ggc	cg	ctg	ggc	cg	gcc	gac	gtg	gcc	gga	ccg	ttg	gct	gtc	gtc	2496
Ser	Gly	Arg	Leu	Gly	Arg	Ala	Asp	Val	Ala	Gly	Pro	Leu	Ala	Val	Val	
			820					825					830			
ctc	gac	gca	ccc	gat	gtg	cgc	tgg	gcc	ggt	cgc	acc	gtg	acc	aac	ccg	2544
Leu	Asp	Ala	Pro	Asp	Val	Arg	Trp	Ala	Gly	Arg	Thr	Val	Thr	Asn	Pro	

835	840	845	
gtg cat cgg atc cgc gac ccg gcc gaa tgg cag gtg cac gat gga ccc Val His Arg Ile Arg Asp Pro Ala Glu Trp Gln Val His Asp Gly Pro 850 855 860			2592
gaa aac ccg cgc gcc gca cac tca tcc acc ggc gcc cgg ctg cag acg Glu Asn Pro Arg Ala Ala His Ser Ser Thr Gly Ala Arg Leu Gln Thr 865 870 875 880			2640
cac ggc gac gac gtc gcc ttg agc gtc gcg cgt ctc ggg cac ctg ggt His Gly Asp Asp Val Ala Leu Ser Val Ala Arg Leu Gly His Leu Gly 885 890 895			2688
cga cat ccg att cac gtt gcc ggc caa cac cgt cga tgg cgg cac ccc Arg His Pro Ile His Val Ala Gly Gln His Arg Arg Trp Arg His Pro 900 905 910			2736
ggt gat cgc cac cga gga cgc cac gcc atg cgc acg gtg ctg cga Gly Asp Arg His Arg Gly Arg His His Ala Met Arg Thr Val Leu Arg 915 920 925			2784
tcg ccg ccg gtg tcg aca gcc cgg agt tct tgc tgc ggt ggc caa cgg Ser Pro Pro Val Ser Thr Ala Arg Ser Ser Cys Cys Gly Gly Gln Arg 930 935 940			2832
gac ggc cac ttt gac ggt gga ctg gca ccc cga gcg tgt tgc cga cca Asp Gly His Phe Asp Gly Gly Leu Ala Pro Arg Ala Cys Cys Arg Pro 945 950 955 960			2880
cac cgt cac cgc cac gtt cgg tgc gcg ctg gca ccc agc ctc acc aac His Arg His Arg His Val Arg Cys Ala Leu Ala Pro Ser Leu Thr Asn 965 970 975			2928
gtg ccg acg cga ctc gtc ggc cct tgt tgg cca gcg gtt ttc gcg gcc Val Pro Thr Arg Leu Val Gly Pro Cys Trp Pro Ala Val Phe Ala Ala 980 985 990			2976
atc gga tcg gcg gtc acc gac acc ggt gag ccg gtg gtg gaa ggc ctg Ile Gly Ser Ala Val Thr Asp Thr Gly Glu Pro Val Val Glu Gly Leu 995 1000 1005			3024
ctg agc ctg gtg cat ctg gac acg cgg ccg cgc gtg gtc ggt cag Leu Ser Leu Val His Leu Asp Thr Arg Pro Arg Val Val Gly Gln 1010 1015 1020			3069
ctg ccc acg gtc ccg gcc caa ttg acc gtc acg caa cgg ctg cca Leu Pro Thr Val Pro Ala Gln Leu Thr Val Thr Gln Arg Leu Pro 1025 1030 1035			3114
acg caa ccg ata cgg aca tgg gcc gcg tcg tgc cgg tct cgg tcg Thr Gln Pro Ile Arg Thr Trp Ala Ala Ser Cys Arg Ser Arg Ser 1040 1045 1050			3159
tcg ttc acc gca tgg cgc cgt gat cgc cac tct cga gga gcg att Ser Phe Thr Ala Trp Arg Arg Asp Arg His Ser Arg Gly Ala Ile 1055 1060 1065			3204
cgc gat cct ggg tcg cac cgg ttc gcc gag ctg gac cgg cgc gag Arg Asp Pro Gly Ser His Arg Phe Ala Glu Leu Asp Arg Arg Glu 1070 1075 1080			3249

1070	1075	1080	
ccg gtg gcg cgg tgt cgc gaa Pro Val Ala Arg Cys Arg Glu 1085	cgc cac cga cac ccc Arg His Arg His Pro 1090	gcg cgt cgc Ala Arg Arg 1095	3294
cgc cgc gac gtc acg atc acc Arg Arg Asp Val Thr Ile Thr 1100	cgc ccg gtc gac atg Ala Pro Val Asp Met 1105	cgc ccg ttc Arg Pro Phe 1110	3339
gcg gtg gtg tcc ggc gac cac Ala Val Val Ser Gly Asp His 1115	aac ccc att cac acc Asn Pro Ile His Thr 1120	gac cgg gcc Asp Arg Ala 1125	3384
gcc gct gct tgc cgg cct gga Ala Ala Ala Cys Arg Pro Gly 1130	gtc gcc gat cgt gca Val Ala Asp Arg Ala 1135	cgg cat gtg Arg His Val 1140	3429
gct gtc ggc cgc ggc gca aca Ala Val Gly Arg Gly Ala Thr 1145	cgc ggt gac cgg cac Arg Gly Asp Arg His 1150	cga cgg gca Arg Arg Ala 1155	3474
ggc ccg cca ccg gcc cgg ctg Gly Pro Pro Pro Ala Arg Leu 1160	gtc ggc tgg acc gcg Val Gly Trp Thr Ala 1165	cgg ttt ttg Arg Phe Leu 1170	3519
ggc atg gtg gcc ccg gcg acg Gly Met Val Ala Pro Ala Thr 1175	agg tgg act tcc ggt Arg Trp Thr Ser Gly 1180	cga gcg cgt Arg Ala Arg 1185	3564
cgg atc gac cag ggc gca gag Arg Ile Asp Gln Gly Ala Glu 1190	att gtg gac gtg gcc Ile Val Asp Val Ala 1195	gcg cgc gtc Ala Arg Val 1200	3609
ggg tcg gat cta gtg atg tcg Gly Ser Asp Leu Val Met Ser 1205	gcc tcc gcg cga ctg Ala Ser Ala Arg Leu 1210	gcc gca ccc Ala Ala Pro 1215	3654
aag acg gtc tac gca ttc ccc Lys Thr Val Tyr Ala Phe Pro 1220	ggc cag ggc atc caa Gly Gln Gly Ile Gln 1225	cac aag ggc His Lys Gly 1230	3699
atg ggc atg gag gtg cgc gcc Met Gly Met Glu Val Arg Ala 1235	gct cca agg cgg ccc Ala Pro Arg Arg Pro 1240	gca agg tgt Ala Arg Cys 1245	3744
ggg aca ccg cgg aca agt tca Gly Thr Pro Arg Thr Ser Ser 1250	ccc gcg aca ccc tgg Pro Ala Thr Pro Trp 1255	gct tct cgg Ala Ser Arg 1260	3789
tac tgc acg tgg tcc gcg aca Tyr Cys Thr Trp Ser Ala Thr 1265	acc cga cca gca tca Thr Arg Pro Ala Ser 1270	tcg cca gcg Ser Pro Ala 1275	3834
gtg tgc act acc acc acc gac Val Cys Thr Thr Thr Thr Asp 1280	ggg gtg ctc tac ctg Gly Val Leu Tyr Leu 1285	acg cag ttc Thr Gln Phe 1290	3879
acc cag gtc gcg atg gcg acg Thr Gln Val Ala Met Ala Thr 1295	gtg gcg gcc ggg cag Val Ala Ala Gly Gln 1300	gtc gcc gag Val Ala Glu 1305	3924

1295	1300	1305	
atg cgt gaa cag gga gcc ttc gtc gaa ggc gcc atc gcg tgc ggc Met Arg Glu Gln Gly Ala Phe Val Glu Gly Ala Ile Ala Cys Gly 1310 1315 1320			3969
cac tcg gtc ggc gag tac acc gcg ctg gcc tgc gtg acc ggc atc His Ser Val Gly Glu Tyr Thr Ala Leu Ala Cys Val Thr Gly Ile 1325 1330 1335			4014
tac caa ctg gaa gcc ttg ctg gag atg gtg ttt cac cgc ggg tcg Tyr Gln Leu Glu Ala Leu Leu Glu Met Val Phe His Arg Gly Ser 1340 1345 1350			4059
aag atg cac gac atc gtt ccg cgc gac gag ctc ggc cgc tcc aac Lys Met His Asp Ile Val Pro Arg Asp Glu Leu Gly Arg Ser Asn 1355 1360 1365			4104
tat cgg ctg tcg gcc atc cgg ccg tcc cag atc gac ctc gac gac Tyr Arg Leu Ser Ala Ile Arg Pro Ser Gln Ile Asp Leu Asp Asp 1370 1375 1380			4149
gcc gac gtg ccc gcg ttc gtc gcc ggg atc gcg gag agc acc ggt Ala Asp Val Pro Ala Phe Val Ala Gly Ile Ala Glu Ser Thr Gly 1385 1390 1395			4194
gaa ttc ctg gag atc gag aat ttc aac ctc ggt ggc tcg caa tac Glu Phe Leu Glu Ile Glu Asn Phe Asn Leu Gly Gly Ser Gln Tyr 1400 1405 1410			4239
gcg atc gcg ggc acg gta cgc ggc ctc gag gcg ctc gag gcc gag Ala Ile Ala Gly Thr Val Arg Gly Leu Glu Ala Leu Glu Ala Glu 1415 1420 1425			4284
gtg gag cgg cgc cgc gag ctc acc ggc ggc cga cgg tcg ttc att Val Glu Arg Arg Arg Glu Leu Thr Gly Gly Arg Arg Ser Phe Ile 1430 1435 1440			4329
ttg gtg ccc ggc atc gat gtt ccg ttc cac tcg cga gtg ctg cgg Leu Val Pro Gly Ile Asp Val Pro Phe His Ser Arg Val Leu Arg 1445 1450 1455			4374
gtc ggg gtg gcc gaa ttc cgg cgc tcg ctg gac cgg gtc atg cgg Val Gly Val Ala Glu Phe Arg Arg Ser Leu Asp Arg Val Met Arg 1460 1465 1470			4419
ccg acg cgg acc cga cct gat cat cgg gcg cta cat tcc caa cct Pro Thr Arg Thr Arg Pro Asp His Arg Ala Leu His Ser Gln Pro 1475 1480 1485			4464
ggt gcc gcg gaa gtt caa ccc tgg acc gcg act tca tcc agg aaa Gly Ala Ala Glu Val Gln Pro Trp Thr Ala Thr Ser Ser Arg Lys 1490 1495 1500			4509
tcc ggg att tgg tgc ccc gcc gag ccg ctc gac gag atc ctc gcc Ser Gly Ile Trp Cys Pro Ala Glu Pro Leu Asp Glu Ile Leu Ala 1505 1510 1515			4554
gac tac gac acc tgg ctt cgc gac gac cgg cga gat ggc gcg cac Asp Tyr Asp Thr Trp Leu Arg Asp Asp Arg Arg Asp Gly Ala His 1520 1525 1530			4599

1520	1525	1530	
ggt gtt cat cga gct gct ggc atg gca att cgc cag ccc ggt gcg 4644			
Gly Val His Arg Ala Ala Gly Met Ala Ile Arg Gln Pro Gly Ala			
1535	1540	1545	
ctg gat cga gac gca gga tct gct gtt cat cga gga ggc gcc ggc 4689			
Leu Asp Arg Asp Ala Gly Ser Ala Val His Arg Gly Gly Ala Gly			
1550	1555	1560	
ggg ctg ggt gtg gag cga ttc gtc gag atc ggt gtg aag agc tca 4734			
Gly Leu Gly Val Glu Arg Phe Val Glu Ile Gly Val Lys Ser Ser			
1565	1570	1575	
ccg acg gtg gcg ggg tct tgc cac caa cac cct caa act gcc cga 4779			
Pro Thr Val Ala Gly Ser Cys His Gln His Pro Gln Thr Ala Arg			
1580	1585	1590	
ata cgc cca cag cac agt gaa gtg ctc aac gcc gag cgt gat gcg 4824			
Ile Arg Pro Gln His Ser Glu Val Leu Asn Ala Glu Arg Asp Ala			
1595	1600	1605	
cgg tgc tgt tcg cca ccg aca ccg acc cgg agc cgg agc cgg agg 4869			
Arg Cys Cys Ser Pro Pro Thr Pro Thr Arg Ser Arg Ser Arg Arg			
1610	1615	1620	
aag acg agc cgg tcg cgg aat cgc ccg cgc cgg acg tcg tct cgg 4914			
Lys Thr Ser Arg Ser Arg Asn Arg Pro Arg Arg Thr Ser Ser Arg			
1625	1630	1635	
aag ccg ccc ccg tcg cgc cgg ccg ctt cgt cgg cgg gcc cgc gtc 4959			
Lys Pro Pro Pro Ser Arg Arg Pro Leu Arg Arg Arg Ala Arg Val			
1640	1645	1650	
ccg acg atc tgg ttt tcg acg ccg ccg atg cca cgc tgc gtg atc 5004			
Pro Thr Ile Trp Phe Ser Thr Pro Pro Met Pro Arg Cys Val Ile			
1655	1660	1665	
gcg ctc tcg gcc aag atg cgc atc gac cag atc gaa gaa ctc gac 5049			
Ala Leu Ser Ala Lys Met Arg Ile Asp Gln Ile Glu Glu Leu Asp			
1670	1675	1680	
tcc atc gag tcc atc acc gac ggt gcg tcg tcg cgg cgc aac cag 5094			
Ser Ile Glu Ser Ile Thr Asp Gly Ala Ser Ser Arg Arg Asn Gln			
1685	1690	1695	
ctg ctg gtg gac ctg ggc tcc gag ctg aac ctc ggt gcc att gaa 5139			
Leu Leu Val Asp Leu Gly Ser Glu Leu Asn Leu Gly Ala Ile Glu			
1700	1705	1710	
cgg cgc cgc cga atc gga cct ggc cgg tct gcg ctc aca ggt gac 5184			
Arg Arg Arg Arg Ile Gly Pro Gly Arg Ser Ala Leu Thr Gly Asp			
1715	1720	1725	
caa act ggc gcg cac cta caa cgt tac ggc cca gtg ctt tcc gac 5229			
Gln Thr Gly Ala His Leu Gln Arg Tyr Gly Pro Val Leu Ser Asp			
1730	1735	1740	
gcc atc aac gac cac gtt cgc acc gtc ctc gga ccg tcg ggc aag 5274			
Ala Ile Asn Asp His Val Arg Thr Val Leu Gly Pro Ser Gly Lys			



1745	1750	1755	
cgg ccc ggc gcc atc gcc gag Arg Pro Gly Ala Ile Ala Glu 1760	cgg gtg aag aag acc Arg Val Lys Lys Thr 1765	tgg gag ctc Trp Glu Leu 1770	5319
ggt gag gct ggg cca agc atg Gly Glu Ala Gly Pro Ser Met 1775	tca ccg tcg agg tcg Ser Pro Ser Arg Ser 1780	cgc tgg gca Arg Trp Ala 1785	5364
ccc gcg agg gca gca gcg ttc Pro Ala Arg Ala Ala Ala Phe 1790	gcg gcg gcg cca tgg Ala Ala Ala Pro Trp 1795	gcc acc tgc Ala Thr Cys 1800	5409
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ctc agc gag ttc acc gac caa Leu Ser Glu Phe Thr Asp Gln 1850	atc acc ggc cgt gag Ile Thr Gly Arg Glu 1855	ggc gtg ctg Gly Val Leu 1860	5589
cct ccg cgg ccc gcc tgg tgc Pro Pro Arg Pro Ala Trp Cys 1865	tgg ggc agc tgg gac Trp Gly Ser Trp Asp 1870	tgg acg acc Trp Thr Thr 1875	5634
cca tca acc gtt gcc ggc cgc Pro Ser Thr Val Ala Gly Arg 1880	ccc gat tcc gag ctg Pro Asp Ser Glu Leu 1885	atc gac ttg Ile Asp Leu 1890	5679
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gag ggt gcc gcc acg tcg tgg Glu Gly Ala Ala Thr Ser Trp 1955	cga ccc agg cta cct Arg Pro Arg Leu Pro 1960	ggt ggc aag Gly Gly Lys 1965	5904
gta agt cgc tcg cgc ggg ccg Val Ser Arg Ser Arg Gly Pro 1970	gca gat cca tgc atc Ala Asp Pro Cys Ile 1975	gct gta cgg Ala Val Arg 1980	5949

1970	1975	1980	
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acc acc tcc aag ctc gac gag gag cgc ctg cgc ttc tac cgc acg Thr Thr Ser Lys Leu Asp Glu Glu Arg Leu Arg Phe Tyr Arg Thr 2030 2035 2040			6129
ctg tat cgc gac cac gcc cgt tac ggc gcg gcg ctg tgg ctg gtc Leu Tyr Arg Asp His Ala Arg Tyr Gly Ala Ala Leu Trp Leu Val 2045 2050 2055			6174
gcg gcg aac atg gcg tcc tac tcc gac gtc gac gcc ctg gtc gaa Ala Ala Asn Met Ala Ser Tyr Ser Asp Val Asp Ala Leu Val Glu 2060 2065 2070			6219
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cac atc aaa gac gcg cag acc ccg acg ctg ctg ttc cgt tgc cgg His Ile Lys Asp Ala Gln Thr Pro Thr Leu Leu Phe Arg Ser Arg 2090 2095 2100			6309
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cta ctc gac cga cga gat ggc gcg gct gct gct cga cct gtg tca Leu Leu Asp Arg Arg Asp Gly Ala Ala Ala Ala Arg Pro Val Ser 2225 2230 2235			6714
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2420	gat gcg cgc gcc ttc gtc gag ttc gat ccc gag cac acg gtc atc	2425	gag ttc gat ccc gag cac acg gtc atc	2430		7344
Asp Ala Arg Ala Phe Val Glu Phe Asp Pro Glu His Thr Val Ile						
2435		2440		2445		
cgg ccg gtg ccc gac tcc acc gac tgg cag gtc atc cgc aag gcc						7389
Arg Pro Val Pro Asp Ser Thr Asp Trp Gln Val Ile Arg Lys Ala						
2450		2455		2460		
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Gly Thr Glu Ile Arg Val Pro Arg Lys Thr Lys Leu Ser Arg Val						
2465		2470		2475		
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Val Gly Gly Gln Ile Pro Thr Gly Phe Asp Pro Thr Val Trp Gly						
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Ile Ser Ala Asp Met Ala Gly Ser Ile Asp Arg Leu Ala Val Trp						
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Asn Met Trp Arg Thr Val Asp Arg Phe Leu Ser Ser Gly Phe Ser						
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Pro Ala Glu Val Met Arg Tyr Val His Pro Ser Leu Val Ala Asn						
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Tyr His Gly Asn Leu Leu Gly Arg Asn Lys Pro Asn Asp Ile Phe						
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Gln Glu Val Leu Pro Ile Ser Phe Ala Ala His Val Val Gln Ser						
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Tyr Val Gly Ser Tyr Gly Ala Met Ile His Pro Val Ala Ala Cys						
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Ala Thr Ala Ala Val Ser Val Glu Glu Gly Val Asp Lys Ile Arg						
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Leu Gly Arg Leu Asn Trp Trp Ser Ala Ala Val Asp Asp Leu Thr						
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Leu Glu Gly Ile Ile Gly Phe Gly Asp Met Ala Ala Thr Ala Asp						
2630		2635		2640		
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Thr Ser Met Met Arg Gly Arg Gly Ile His Asp Ser Lys Phe Ser						

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Arg Pro Asn Asp Arg Arg Arg	Leu Ala Ser Ser Lys	Pro Lys Ala	
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Ala Ala Gly Ala Gly Gly Gly	Gly Phe Ala Gln Ser	Phe Gly Asp	
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Gly Ala Arg Arg Gln Gly Phe	Ser Cys Gly Gly Arg	Trp Pro Ser	
2720	2725	2730	
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Cys Val Ala Ala Asp Asp Val	Ala Val Ile Ser Lys	His Asp Thr	
2735	2740	2745	
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Ser Thr Leu Ala Asn Asp Pro	Asn Glu Thr Glu Leu	His Glu Arg	
2750	2755	2760	
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Leu Ala Asp Ala Leu Gly Arg	Ser Glu Gly Ala Pro	Leu Phe Val	
2765	2770	2775	
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2780	2785	2790	
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Ser Ser Arg			
2795			

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Pro Asp Val Gly Arg Arg Val Gly Ala Arg Arg Val Ala Tyr Pro Asp  
20 25 30

Arg Gly Asp Pro Gly Ala Gly Pro Ser Arg His Gly Pro Arg Gly His  
35 40 45

Pro Ala Gly Arg His Gly Gly His Ser Gln Gly Val Leu Ala Val Glu  
50 55 60

Ala Leu Lys Ala Gly Gly Ala Arg Asp Val Glu Leu Phe Ala Leu Ala  
65 70 75 80

Gln Leu Ile Gly Ala Ala Gly Thr Leu Val Ala Arg Arg Arg Glu Phe  
85 90 95

Pro Ser Trp Ala Ile Ala Pro Met Val Ser Val Thr Asn Ala Asp Pro  
100 105 110

Glu Arg Ile Gly Arg Leu Leu Asp Glu Phe Ala Gln Asp Val Arg Thr  
115 120 125

Val Leu Pro Pro Val Leu Ser Ile Arg Asn Gly Arg Arg Ala Val Val  
130 135 140

Ile Thr Gly Thr Pro Glu Gln Leu Ser Arg Phe Glu Leu Tyr Cys Arg  
145 150 155 160

Gln Ile Ser Glu Lys Glu Glu Ala Asp Arg Lys Asn Lys Val Arg Gly  
165 170 175

Gly Asp Val Phe Ser Pro Val Phe Glu Pro Val Gln Val Glu Val Gly  
180 185 190

Phe His Thr Pro Arg Leu Ser Asp Gly Ile Asp Ile Val Ala Gly Trp  
195 200 205

Ala Glu Lys Ala Gly Leu Asp Val Ala Leu Ala Arg Glu Leu Ala Asp  
210 215 220

Ala Ile Leu Ile Arg Lys Val Asp Trp Val Asp Glu Ile Thr Arg Val  
225 230 235 240

His Arg Ala Gly Ala Arg Trp Ile Leu Asp Leu Gly Pro Gly Asp Ile  
245 250 255

Leu Thr Arg Leu Thr Ala Pro Val Ile Arg Gly Leu Gly Ile Gly Ile  
260 265 270

Val Pro Ala Arg Thr Arg Gly Gly Gln Arg Asn Leu Phe Thr Val Gly  
275 280 285

Ala Thr Pro Glu Val Ala Arg Ala Trp Ser Ser Tyr Ala Pro Thr Val  
290 295 300

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Leu Thr Arg Arg Ser Pro Ile Leu Leu Ala Gly Met Thr Pro Thr Thr  
325 330 335

Val Asp Ala Lys Ile Val Ala Ala Ala Ala Asn Gly Arg His Trp Ala  
340 345 350

Glu Leu Ala Ala Arg Gly Arg Ser Pro Lys Arg Ser Ser Val Thr Ala  
355 360 365

Ser Asn Lys Trp Pro Ala Cys Ser Ser Arg Ala Ala Pro Ile Ser Ser  
370 375 380

Thr Arg Cys Ser Ser Ile Pro Thr Cys Glu Ala Ser Gly Gly Arg Gln  
385 390 395 400

Ala Val Gly Ala Glu Gly Pro Pro Val Arg Arg Arg Asp Arg Arg Arg  
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Gly Asp Gln Arg Arg His Pro Arg Pro Arg Arg Gly Arg Arg Ala Asp  
420 425 430

Arg Arg Thr Gly Arg His Arg His Gln Pro Arg Arg Val Gln Thr Arg  
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Asp His Arg Ala Asp Pro Leu Gly Asp Ser His Arg His Arg Gly Ala  
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His Gln Ala Gly Asp His Ala Arg Arg Gly Pro Gly Ala Pro Ala Gly  
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Thr Ile Pro Gly Arg Ile Ser His Leu Leu Leu Ala Thr Tyr Ser Ala  
485 490 495

Asp Arg Ala Pro Arg Gln His His Val Cys Val Gly Gly Gly His Leu  
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Gly Thr Pro Lys Lys Gly Cys Gly Tyr Leu Ser Gly Pro Gly Arg Ser  
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Val Arg Leu Pro Ile Asp Ala Asp Arg Arg Ile Leu Val Gly Thr Ala  
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Leu Val Asp Thr Gln Gly Thr Asp Gln Trp Ile Ser Ala Gly Lys Ala  
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Gln Gly Arg Met Pro Pro Ala Glu Ser Ala Arg Cys Arg His Pro Arg  
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Asp Arg His Ser Ala Ser Val Arg Arg Cys Ser Thr Arg Trp Pro Val  
595 600 605

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675 680 685

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690 695 700

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705 710 715 720

Leu His Pro Ala Asp Val Pro Phe Phe Val Thr Leu Cys Lys Thr Leu  
725 730 735

Gly Lys Pro Val Asn Phe Val Pro Ala Ile Asp Leu Val Val Arg Ala  
740 745 750

Gly Gly Ala Ala Thr Arg Cys Gly Arg Pro Thr Thr Pro Ala Thr Thr  
755 760 765

Pro Met Arg Cys Ala Ser Phe Arg Ala Arg Val Gly Ser Arg Ile Thr  
770 775 780



Arg Met Asp Glu Pro Val Gly Glu Leu Leu Asp Ala Phe Glu Gln Ala  
785 790 795 800

Ala Ile Asp Glu Val Leu Gly Ala Gly Val Glu Pro Lys Asp Val Ala  
805 810 815

Ser Gly Arg Leu Gly Arg Ala Asp Val Ala Gly Pro Leu Ala Val Val  
820 825 830

Leu Asp Ala Pro Asp Val Arg Trp Ala Gly Arg Thr Val Thr Asn Pro  
835 840 845

Val His Arg Ile Arg Asp Pro Ala Glu Trp Gln Val His Asp Gly Pro  
850 855 860

Glu Asn Pro Arg Ala Ala His Ser Ser Thr Gly Ala Arg Leu Gln Thr  
865 870 875 880

His Gly Asp Asp Val Ala Leu Ser Val Ala Arg Leu Gly His Leu Gly  
885 890 895

Arg His Pro Ile His Val Ala Gly Gln His Arg Arg Trp Arg His Pro  
900 905 910

Gly Asp Arg His Arg Gly Arg His His Ala Met Arg Thr Val Leu Arg  
915 920 925

Ser Pro Pro Val Ser Thr Ala Arg Ser Ser Cys Cys Gly Gly Gln Arg  
930 935 940

Asp Gly His Phe Asp Gly Gly Leu Ala Pro Arg Ala Cys Cys Arg Pro  
945 950 955 960

His Arg His Arg His Val Arg Cys Ala Leu Ala Pro Ser Leu Thr Asn  
965 970 975

Val Pro Thr Arg Leu Val Gly Pro Cys Trp Pro Ala Val Phe Ala Ala  
980 985 990

Ile Gly Ser Ala Val Thr Asp Thr Gly Glu Pro Val Val Glu Gly Leu  
995 1000 1005

Leu Ser Leu Val His Leu Asp Thr Arg Pro Arg Val Val Gly Gln  
1010 1015 1020

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 Thr Gln Pro Ile Arg Thr Trp Ala Ala Ser Cys Arg Ser Arg Ser  
 1040 1045 1050  
 Ser Phe Thr Ala Trp Arg Arg Asp Arg His Ser Arg Gly Ala Ile  
 1055 1060 1065  
 Arg Asp Pro Gly Ser His Arg Phe Ala Glu Leu Asp Arg Arg Glu  
 1070 1075 1080  
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 Gly Met Val Ala Pro Ala Thr Arg Trp Thr Ser Gly Arg Ala Arg  
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Met Arg Glu Gln Gly Ala Phe Val Glu Gly Ala Ile Ala Cys Gly  
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Tyr Gln Leu Glu Ala Leu Leu Glu Met Val Phe His Arg Gly Ser  
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Lys Met His Asp Ile Val Pro Arg Asp Glu Leu Gly Arg Ser Asn  
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Tyr Arg Leu Ser Ala Ile Arg Pro Ser Gln Ile Asp Leu Asp Asp  
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Val Glu Arg Arg Arg Glu Leu Thr Gly Gly Arg Arg Ser Phe Ile  
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Val Gly Val Ala Glu Phe Arg Arg Ser Leu Asp Arg Val Met Arg  
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Ser Ile Glu Ser Ile Thr Asp Gly Ala Ser Ser Arg Arg Asn Gln  
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1730						1735					1740			
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1850						1855					1860			
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Pro	Ser	Thr	Val	Ala	Gly	Arg	Pro	Asp	Ser	Glu	Leu	Ile	Asp	Leu
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Val	Thr	Ala	Glu	Leu	Gly	Arg	Thr	Gly	Arg	Gly	Trp	Trp	His	Arg
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Cys	Ser	Thr	Pro	Arg	Arg	Pro	Ser	Tyr	Ser	Thr	Thr	Ala	Gly	Gln
1910						1915					1920			

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Arg Arg 1940	Arg His Arg Arg	Arg 1945	Leu Ala Ala Leu	Ala 1950	Glu Arg Phe
Glu Gly 1955	Ala Ala Thr Ser	Trp 1960	Arg Pro Arg Leu	Pro 1965	Gly Gly Lys
Val Ser 1970	Arg Ser Arg Gly	Pro 1975	Ala Asp Pro Cys	Ile 1980	Ala Val Arg
Pro His 1985	Ala Ala Gly Ala	Glu 1990	Asn Pro Glu Pro	Arg 1995	Val Arg Arg
Arg Ser 2000	Cys Arg Gly Asp	Arg 2005	Arg Phe Glu Gly	Phe 2010	Asp Arg Arg
Val Gly 2015	Gly Gly Ser Ala	Ala 2020	Arg Arg Gly Ala	Thr 2025	Val Ile Ala
Thr Thr 2030	Ser Lys Leu Asp	Glu 2035	Glu Arg Leu Arg	Phe 2040	Tyr Arg Thr
Leu Tyr 2045	Arg Asp His Ala	Arg 2050	Tyr Gly Ala Ala	Leu 2055	Trp Leu Val
Ala Ala 2060	Asn Met Ala Ser	Tyr 2065	Ser Asp Val Asp	Ala 2070	Leu Val Glu
Trp Ile 2075	Gly Thr Glu Gln	Thr 2080	Glu Ser Leu Gly	Pro 2085	Gln Ser Ile
His Ile 2090	Lys Asp Ala Gln	Thr 2095	Pro Thr Leu Leu	Phe 2100	Arg Ser Arg
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Gly Asp 2120	Glu Ser Ala Ala	Val 2125	Ala Val Gln Arg	Leu 2130	Ile Gly Gly
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2165		2170		2175	
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Gln Arg	Cys His Arg Gly	Arg	Arg Arg Arg Gly	Arg	Gly His His
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Leu Leu	Asp Arg Arg Asp	Gly	Ala Ala Ala Ala	Arg	Pro Val Ser
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Cys Gly	Ile Gln Gly Gly	Cys	Gly Arg Ser Pro	Ile	Lys Ala Asp
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Arg Thr	Pro Arg Pro Leu	Ala	Pro Ser Pro Arg	Cys	Arg Arg Arg
2285		2290		2295	
Pro Gly	Phe Thr Pro Ala	Pro	Pro Pro Gln Trp	Asp	Asp Leu Asp
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Gly Pro	Tyr Gly Ser Ser	Arg	Thr Arg Phe Glu	Met	Glu Val Glu
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Gln Val Lys Arg Val Pro Leu Gln Arg Leu Arg Ile Val Arg Gly Thr	
95 100 105	
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Gln Leu Phe Glu Asp Lys Tyr Ala Leu Ala Val Leu Asp Asn Arg Asp	
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Pro Gln Asp Asn Val Ala Ala Ser Thr Pro Gly Arg Thr Pro Glu Gly	
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Trp Lys Asp Val Phe Arg Lys Asn Asn Gln Leu Ala Pro Val Asp Ile	
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Asp Thr Asn Arg Ser Arg Ala Cys Pro Pro Cys Ala Pro Ala Cys Lys	
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195

200

205

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Phe Asp Gly Asp Pro Ser Ser Gly Ile Ala Pro Leu Arg Pro Glu Gln  
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Leu Gln Val Phe Glu Thr Leu Glu Glu Ile Thr Gly Tyr Leu Tyr Ile  
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Ser Ala Trp Pro Asp Ser Leu Arg Asp Leu Ser Val Phe Gln Asn Leu  
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Arg Ile Ile Arg Gly Arg Ile Leu His Asp Gly Ala Tyr Ser Leu Thr

435

440

445

Leu Gln Gly Leu Gly Ile His Ser Leu Gly Leu Arg Ser Leu Arg Glu  
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Leu Gly Ser Gly Leu Ala Leu Ile His Arg Asn Ala His Leu Cys Phe  
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Val His Thr Val Pro Trp Asp Gln Leu Phe Arg Asn Pro His Gln Ala  
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Leu Leu His Ser Gly Asn Arg Pro Glu Glu Asp Leu Cys Val Ser Ser  
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Gly Leu Val Cys Asn Ser Leu Cys Ala His Gly His Cys Trp Gly Pro  
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Gly Pro Thr Gln Cys Val Asn Cys Ser His Phe Leu Arg Gly Gln Glu  
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Cys Val Glu Glu Cys Arg Val Trp Lys Gly Leu Pro Arg Glu Tyr Val  
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Ser Asp Lys Arg Cys Leu Pro Cys His Pro Glu Cys Gln Pro Gln Asn  
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Ser Ser Glu Thr Cys Phe Gly Ser Glu Ala Asp Gln Cys Ala Ala Cys  
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Ala His Tyr Lys Asp Ser Ser Ser Cys Val Ala Arg Cys Pro Ser Gly  
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Val Lys Pro Asp Leu Ser Tyr Met Pro Ile Trp Lys Tyr Pro Asp Glu  
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Glu Gly Ile Cys Gln Pro Cys Pro Ile Asn Cys Thr His Ser Cys Val  
 625 630 635 640

Asp Leu Asp Glu Arg Gly Cys Pro Ala Glu Gln Arg Ala Ser Pro Val  
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Thr Phe Ile Ile Ala Thr Val Glu Gly Val Leu Leu Phe Leu Ile Leu  
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Val Val Val Val Gly Ile Leu Ile Lys Arg Arg Arg Gln Lys Ile Arg

675

680

685

Lys Tyr Thr Met Arg Arg Leu Leu Gln Glu Thr Glu Leu Val Glu Pro  
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Leu Thr Pro Ser Gly Ala Met Pro Asn Gln Ala Gln Met Arg Ile Leu  
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Lys Glu Thr Glu Leu Arg Lys Val Lys Val Leu Gly Ser Gly Ala Phe  
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Gly Thr Val Tyr Lys Gly Ile Trp Ile Pro Asp Gly Glu Asn Val Lys  
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Ile Pro Val Ala Ile Lys Val Leu Arg Glu Asn Thr Ser Pro Lys Ala  
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Asn Lys Glu Ile Leu Asp Glu Ala Tyr Val Met Ala Gly Val Gly Ser  
770 775 780

Pro Tyr Val Ser Arg Leu Leu Gly Ile Cys Leu Thr Ser Thr Val Gln  
785 790 795 800

Leu Val Thr Gln Leu Met Pro Tyr Gly Cys Leu Leu Asp His Val Arg  
805 810 815

Glu His Arg Gly Arg Leu Gly Ser Gln Asp Leu Leu Asn Trp Cys Val  
820 825 830

Gln Ile Ala Lys Gly Met Ser Tyr Leu Glu Asp Val Arg Leu Val His  
835 840 845

Arg Asp Leu Ala Ala Arg Asn Val Leu Val Lys Ser Pro Asn His Val  
850 855 860

Lys Ile Thr Asp Phe Gly Leu Ala Arg Leu Leu Asp Ile Asp Glu Thr  
865 870 875 880

Glu Tyr His Ala Asp Gly Gly Lys Val Pro Ile Lys Trp Met Ala Leu  
885 890 895

Glu Ser Ile Leu Arg Arg Arg Phe Thr His Gln Ser Asp Val Trp Ser  
900 905 910

Tyr Gly Val Thr Val Trp Glu Leu Met Thr Phe Gly Ala Lys Pro Tyr



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Pro	Arg	Glu	Gly	Thr	Ala	Ser	Pro	Pro	His	Pro	Ser	Pro	Ala	Phe					
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Ser	Pro	Ala	Phe	Asp	Asn	Leu	Tyr	Tyr	Trp	Asp	Gln	Asn	Ser	Ser					
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Ser	Gly	Gly	Gly	Ser	Pro	Thr	Ser	Leu	Trp	Gly	Leu	Leu	Phe	Leu	Ser	
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Ala	Ala	Leu	Ser	Leu	Trp	Pro	Thr	Ser	Gly	Glu	Ile	Cys	Gly	Pro	Gly	
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Ile	Asp	Ile	Arg	Asn	Asp	Tyr	Gln	Gln	Leu	Lys	Arg	Leu	Glu	Asn	Cys	
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Thr	Val	Ile	Glu	Gly	Tyr	Leu	His	Ile	Leu	Leu	Ile	Ser	Lys	Ala	Glu	
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Asp	Tyr	Arg	Ser	Tyr	Arg	Phe	Pro	Lys	Leu	Thr	Val	Ile	Thr	Glu	Tyr	
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Pro	Asn	Leu	Thr	Val	Ile	Arg	Gly	Trp	Lys	Leu	Phe	Tyr	Asn	Tyr	Ala		
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Leu	Cys	Tyr	Leu	Ser	Thr	Val	Asp	Trp	Ser	Leu	Ile	Leu	Asp	Ala	Val		
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Ser	Asn	Asn	Tyr	Ile	Val	Gly	Asn	Lys	Pro	Pro	Lys	Glu	Cys	Gly	Asp		
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Lys	Met	Cys	Pro	Ser	Thr	Cys	Gly	Lys	Arg	Ala	Cys	Thr	Glu	Asn	Asn		
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Glu	Cys	Cys	His	Pro	Glu	Cys	Leu	Gly	Ser	Cys	Ser	Ala	Pro	Asp	Asn		
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gac	acg	gcc	tgt	gta	gct	tgc	cgc	cac	tac	tac	tat	gcc	ggt	gtc	tgt		825
Asp	Thr	Ala	Cys	Val	Ala	Cys	Arg	His	Tyr	Tyr	Tyr	Ala	Gly	Val	Cys		
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Val	Pro	Ala	Cys	Pro	Pro	Asn	Thr	Tyr	Arg	Phe	Glu	Gly	Trp	Arg	Cys		
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Val	Asp	Arg	Asp	Phe	Cys	Ala	Asn	Ile	Leu	Ser	Ala	Glu	Ser	Ser	Asp		
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Ser	Glu	Gly	Phe	Val	Ile	His	Asp	Gly	Glu	Cys	Met	Gln	Glu	Cys	Pro		
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tcg	ggc	ttc	atc	cgc	aac	ggc	agc	cag	agc	atg	tac	tgc	atc	cct	tgt		1017
Ser	Gly	Phe	Ile	Arg	Asn	Gly	Ser	Gln	Ser	Met	Tyr	Cys	Ile	Pro	Cys		
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Glu 325	Gly	Pro	Cys	Pro	Lys 330	Val	Cys	Glu	Glu	Glu 335	Lys	Lys	Thr	Lys	Thr 340	
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			360					365					370			
gag Glu	ctg Leu	gag Glu	aac Asn	ttc Phe	atg Met	ggg Gly	ctc Leu	atc Ile	gag Glu	gtg Val	gtg Val	acg Thr	ggc Gly	tac Tyr	gtg Val	1209
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405					410					415					420	
tac Tyr	gtc Val	ctc Leu	gac Asp	aac Asn	cag Gln	aac Asn	ttg Leu	cag Gln	caa Gln	ctg Leu	tgg Trp	gac Asp	tgg Trp	gac Asp	cac His	1353
				425					430					435		
cgc Arg	aac Asn	ctg Leu	acc Thr	atc Ile	aaa Lys	gca Ala	ggg Gly	aaa Lys	atg Met	tac Tyr	ttt Phe	gct Ala	ttc Phe	aat Asn	ccc Pro	1401
			440					445					450			
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aaa Lys	ggg Gly	cgc Arg	caa Gln	agc Ser	aaa Lys	ggg Gly	gac Asp	ata Ile	aac Asn	acc Thr	agg Arg	aac Asn	aac Asn	ggg Gly	gag Glu	1497
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		535					540					545				
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		550				555					560					
ggc Glu	atc Leu	tta Glu	cta Val	cat Asp	ggg Glu	ctg Val	aag Asp	ccc Pro	tgg Lys	act Asp	cag Thr	tac Glu	gcc Glu	gtt Glu	tac Pro	1785

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Val	Lys	Ala	Val	Thr	Leu	Thr	Met	Val	Glu	Asn	Asp	His	Ile	Arg	Gly	
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Ala	Lys	Ser	Glu	Ile	Leu	Tyr	Ile	Arg	Thr	Asn	Ala	Ser	Val	Pro	Ser	
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Ile	Pro	Leu	Asp	Val	Leu	Ser	Ala	Ser	Asn	Ser	Ser	Ser	Gln	Leu	Ile	
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Val	Lys	Trp	Asn	Pro	Pro	Ser	Leu	Pro	Asn	Gly	Asn	Leu	Ser	Tyr	Tyr	
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Gly	Gly	Glu	Lys	Gly	Pro	Cys	Cys	Ala	Cys	Pro	Lys	Thr	Glu	Ala	Glu	
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Lys	Gln	Ala	Glu	Lys	Glu	Glu	Ala	Glu	Tyr	Arg	Lys	Val	Phe	Glu	Asn	
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Val	Phe	Ala	Arg	Thr	Met	Pro	Ala	Glu	Gly	Ala	Asp	Asp	Ile	Pro	Gly	
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Phe Asn Cys His	His Val Val Arg	Leu	Leu Gly Val Val	Ser	Gln	
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Leu Lys Ser Tyr	Leu Arg Ser Leu	Arg	Pro Glu Met Glu	Asn	Asn	
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Pro Val Leu Ala	Pro Pro Ser Leu	Ser	Lys Met Ile Gln	Met	Ala	
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Val His Arg Asp	Leu Ala Ala Arg	Asn	Cys Met Val Ala	Glu	Asp	
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Glu Thr Asp Tyr	Tyr Arg Lys Gly	Gly	Lys Gly Leu Leu	Pro	Val	
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Tyr Ala Val Tyr Val Lys Ala Val Thr Leu Thr Met Val Glu Asn Asp  
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Cys Tyr Thr Met Asp Pro Ser Val Arg Trp Glu Tyr Cys Asn Leu Thr	
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Gln Cys Pro Val Met Glu Ser Thr Leu Leu Thr Thr Pro Thr Val Val	
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Pro Val Pro Ser Thr Glu Leu Pro Ser Glu Glu Ala Pro Thr Glu Asn	
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Ser Thr Gly Val Gln Asp Cys Tyr Arg Gly Asp Gly Gln Ser Tyr Arg	
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Gly Thr Leu Ser Thr Thr Ile Thr Gly Arg Thr Cys Gln Ser Trp Ser	
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Ser Met Thr Pro His Trp His Arg Arg Ile Pro Leu Tyr Tyr Pro Asn	
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Glu Lys Ser Pro Val Val Gln Asp Cys Tyr His Gly Asp Gly Arg Ser	
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Tyr Arg Gly Ile Ser Ser Thr Thr Val Thr Gly Arg Thr Cys Gln Ser	
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Trp Ser Ser Met Ile Pro His Trp His Gln Arg Thr Pro Glu Asn Tyr	
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Glu Lys Asn Tyr Cys Arg Asn Pro Asp Gly Asp Ile Asn Gly Pro Trp	
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Cys Tyr Thr Met Asn Pro Arg Lys Leu Phe Asp Tyr Cys Asp Ile Pro	
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Ile Ser Pro Trp Cys Tyr Thr Met Asp Pro Asn Val Arg Trp Glu Tyr  
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Cys Asn Leu Thr Gln Cys Pro Val Thr Glu Ser Ser Val Leu Ala Thr  
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Ser Thr Ala Val Ser Glu Gln Ala Pro Thr Glu Gln Ser Pro Thr Val  
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His Trp His Gln Arg Thr Thr Glu Tyr Tyr Pro Asn Gly Gly Leu Thr  
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Gln	Lys	Ala	Ala	Ile	Gln	Ala	Leu	Arg	Lys	Met	Glu	Pro	Lys	Asp	Lys		
	525					530					535						
gac	cag	gag	gtt	ctt	ctt	cag	act	ttc	ctt	gat	gat	gct	tct	ccg	gga	1743	
Asp	Gln	Glu	Val	Leu	Leu	Gln	Thr	Phe	Leu	Asp	Asp	Ala	Ser	Pro	Gly		
				545						550					555		
gat	aag	cga	ctg	gct	gcc	tat	ctt	atg	ttg	atg	agg	agt	cct	tca	cag	1791	
Asp	Lys	Arg	Leu	Ala	Ala	Tyr	Leu	Met	Leu	Met	Arg	Ser	Pro	Ser	Gln		
				560					565					570			
gca	gat	att	aac	aaa	att	gtc	caa	att	cta	cca	tgg	gaa	cag	aat	gag	1839	
Ala	Asp	Ile	Asn	Lys	Ile	Val	Gln	Ile	Leu	Pro	Trp	Glu	Gln	Asn	Glu		
			575					580					585				
caa	gtg	aag	aac	ttt	gtg	gct	tcc	cat	att	gcc	aat	atc	ttg	aac	tca	1887	

Gln Val Lys Asn Phe Val Ala Ser His Ile Ala Asn Ile Leu Asn Ser	
590	595 600
gaa gaa ttg gat atc caa gat ctg aaa aag tta gtg aaa gaa gtt ctg	1935
Glu Glu Leu Asp Ile Gln Asp Leu Lys Lys Leu Val Lys Glu Val Leu	
605	610 615
aaa gaa tct caa ctt cca act gtc atg gac ttc aga aaa ttc tct cgg	1983
Lys Glu Ser Gln Leu Pro Thr Val Met Asp Phe Arg Lys Phe Ser Arg	
620	625 630 635
aac tat caa ctc tac aaa tct gtt tct att cca tca ctt gac cca gcc	2031
Asn Tyr Gln Leu Tyr Lys Ser Val Ser Ile Pro Ser Leu Asp Pro Ala	
	640 645 650
tca gcc aaa ata gaa ggg aat ctt ata ttt gat cca aat aac tac ctt	2079
Ser Ala Lys Ile Glu Gly Asn Leu Ile Phe Asp Pro Asn Asn Tyr Leu	
	655 660 665
cct aaa gaa agc atg ctg aaa act acc ctc act gcc ttt gga ttt gct	2127
Pro Lys Glu Ser Met Leu Lys Thr Thr Leu Thr Ala Phe Gly Phe Ala	
	670 675 680
tca gct gac ctc atc gag att ggc ttg gaa gga aaa ggc ttt gag cca	2175
Ser Ala Asp Leu Ile Glu Ile Gly Leu Glu Gly Lys Gly Phe Glu Pro	
	685 690 695
aca ttg gaa gct ctt ttt ggg aag caa gga ttt ttc cca gac agt gtc	2223
Thr Leu Glu Ala Leu Phe Gly Lys Gln Gly Phe Phe Pro Asp Ser Val	
700	705 710 715
aac aaa gct ttg tac tgg gtt aat ggt caa gtt cct gat ggt gtc tct	2271
Asn Lys Ala Leu Tyr Trp Val Asn Gly Gln Val Pro Asp Gly Val Ser	
	720 725 730
aag gtc tta gtg gac cac ttt ggc tat acc aaa gat gat aaa cat gag	2319
Lys Val Leu Val Asp His Phe Gly Tyr Thr Lys Asp Asp Lys His Glu	
	735 740 745
cag gat atg gta aat gga ata atg ctc agt gtt gag aag ctg att aaa	2367
Gln Asp Met Val Asn Gly Ile Met Leu Ser Val Glu Lys Leu Ile Lys	
	750 755 760
gat ttg aaa tcc aaa gaa gtc ccg gaa gcc aga gcc tac ctc cgc atc	2415
Asp Leu Lys Ser Lys Glu Val Pro Glu Ala Arg Ala Tyr Leu Arg Ile	
	765 770 775
ttg gga gag gag ctt ggt ttt gcc agt ctc cat gac ctc cag ctc ctg	2463
Leu Gly Glu Glu Leu Gly Phe Ala Ser Leu His Asp Leu Gln Leu Leu	
	780 785 790 795
gga aag ctg ctt ctg atg ggt gcc cgc act ctg cag ggg atc ccc cag	2511
Gly Lys Leu Leu Leu Met Gly Ala Arg Thr Leu Gln Gly Ile Pro Gln	
	800 805 810
atg att gga gag gtc atc agg aag ggc tca aag aat gac ttt ttt ctt	2559
Met Ile Gly Glu Val Ile Arg Lys Gly Ser Lys Asn Asp Phe Phe Leu	
	815 820 825
cac tac atc ttc atg gag aat gcc ttt gaa ctc ccc act gga gct gga	2607

His Tyr Ile Phe Met Glu Asn Ala Phe Glu Leu Pro Thr Gly Ala Gly	
830 835 840	
tta cag ttg caa ata tct tca tct gga gtc att gct ccc gga gcc aag	2655
Leu Gln Leu Gln Ile Ser Ser Ser Gly Val Ile Ala Pro Gly Ala Lys	
845 850 855	
gct gga gta aaa ctg gaa gta gcc aac atg cag gct gaa ctg gtg gca	2703
Ala Gly Val Lys Leu Glu Val Ala Asn Met Gln Ala Glu Leu Val Ala	
860 865 870 875	
aaa ccc tcc gtg tct gtg gag ttt gtg aca aat atg ggc atc atc att	2751
Lys Pro Ser Val Ser Val Glu Phe Val Thr Asn Met Gly Ile Ile Ile	
880 885 890	
ccg gac ttc gct agg agt ggg gtc cag atg aac acc aac ttc ttc cac	2799
Pro Asp Phe Ala Arg Ser Gly Val Gln Met Asn Thr Asn Phe Phe His	
895 900 905	
gag tcg ggt ctg gag gct cat gtt gcc cta aaa cct ggg aag ctg aag	2847
Glu Ser Gly Leu Glu Ala His Val Ala Leu Lys Pro Gly Lys Leu Lys	
910 915 920	
ttt atc att cct tcc cca aag aga cca gtc aag ctg ctc agt gga ggc	2895
Phe Ile Ile Pro Ser Pro Lys Arg Pro Val Lys Leu Leu Ser Gly Gly	
925 930 935	
aac aca tta cat ttg gtc tct acc acc aaa acg gag gtg atc cca cct	2943
Asn Thr Leu His Leu Val Ser Thr Thr Lys Thr Glu Val Ile Pro Pro	
940 945 950 955	
ctc att gag aac agg cag tcc tgg tca gtt tgc aag caa gtc ttt cct	2991
Leu Ile Glu Asn Arg Gln Ser Trp Ser Val Cys Lys Gln Val Phe Pro	
960 965 970	
ggc ctg aat tac tgc acc tca ggc gct tac tcc aac gcc agc tcc aca	3039
Gly Leu Asn Tyr Cys Thr Ser Gly Ala Tyr Ser Asn Ala Ser Ser Thr	
975 980 985	
gac tcc gcc tcc tac tat ccg ctg acc ggg gac acc aga tta gag ctg	3087
Asp Ser Ala Ser Tyr Tyr Pro Leu Thr Gly Asp Thr Arg Leu Glu Leu	
990 995 1000	
gaa ctg agg cct aca gga gag att gag cag tat tct gtc agc gca	3132
Glu Leu Arg Pro Thr Gly Glu Ile Glu Gln Tyr Ser Val Ser Ala	
1005 1010 1015	
acc tat gag ctc cag aga gag gac aga gcc ttg gtg gat acc ctg	3177
Thr Tyr Glu Leu Gln Arg Glu Asp Arg Ala Leu Val Asp Thr Leu	
1020 1025 1030	
aag ttt gta act caa gca gaa ggt gcg aag cag act gag gct acc	3222
Lys Phe Val Thr Gln Ala Glu Gly Ala Lys Gln Thr Glu Ala Thr	
1035 1040 1045	
atg aca ttc aaa tat aat cgg cag agt atg acc ttg tcc agt gaa	3267
Met Thr Phe Lys Tyr Asn Arg Gln Ser Met Thr Leu Ser Ser Glu	
1050 1055 1060	
gtc caa att ccg gat ttt gat gtt gac ctc gga aca atc ctc aga	3312

Val Gln Ile Pro Asp Phe Asp	Val Asp Leu Gly Thr	Ile Leu Arg	
1065	1070	1075	
ggt aat gat gaa tct act gag	ggc aaa acg tct tac	aga ctc acc	3357
Val Asn Asp Glu Ser Thr Glu	Gly Lys Thr Ser Tyr	Arg Leu Thr	
1080	1085	1090	
ctg gac att cag aac aag aaa	att act gag gtc gcc	ctc atg ggc	3402
Leu Asp Ile Gln Asn Lys Lys	Ile Thr Glu Val Ala	Leu Met Gly	
1095	1100	1105	
cac cta agt tgt gac aca aag	gaa gaa aga aaa atc	aag ggt gtt	3447
His Leu Ser Cys Asp Thr Lys	Glu Glu Arg Lys Ile	Lys Gly Val	
1110	1115	1120	
att tcc ata ccc cgt ttg caa	gca gaa gcc aga agt	gag atc ctc	3492
Ile Ser Ile Pro Arg Leu Gln	Ala Glu Ala Arg Ser	Glu Ile Leu	
1125	1130	1135	
gcc cac tgg tgc cct gcc aaa	ctg ctt ctc caa atg	gac tca tct	3537
Ala His Trp Ser Pro Ala Lys	Leu Leu Leu Gln Met	Asp Ser Ser	
1140	1145	1150	
gct aca gct tat ggc tcc aca	gtt tcc aag agg gtg	gca tgg cat	3582
Ala Thr Ala Tyr Gly Ser Thr	Val Ser Lys Arg Val	Ala Trp His	
1155	1160	1165	
tat gat gaa gag aag att gaa	ttt gaa tgg aac aca	ggc acc aat	3627
Tyr Asp Glu Glu Lys Ile Glu	Phe Glu Trp Asn Thr	Gly Thr Asn	
1170	1175	1180	
gta gat acc aaa aaa atg act	tcc aat ttc cct gtg	gat ctc tcc	3672
Val Asp Thr Lys Lys Met Thr	Ser Asn Phe Pro Val	Asp Leu Ser	
1185	1190	1195	
gat tat cct aag agc ttg cat	atg tat gct aat aga	ctc ctg gat	3717
Asp Tyr Pro Lys Ser Leu His	Met Tyr Ala Asn Arg	Leu Leu Asp	
1200	1205	1210	
cac aga gtc cct caa aca gac	atg act ttc cgg cac	gtg ggt tcc	3762
His Arg Val Pro Gln Thr Asp	Met Thr Phe Arg His	Val Gly Ser	
1215	1220	1225	
aaa tta ata gtt gca atg agc	tca tgg ctt cag aag	gca tct ggg	3807
Lys Leu Ile Val Ala Met Ser	Ser Trp Leu Gln Lys	Ala Ser Gly	
1230	1235	1240	
agt ctt cct tat acc cag act	ttg caa gac cac ctc	aat agc ctg	3852
Ser Leu Pro Tyr Thr Gln Thr	Leu Gln Asp His Leu	Asn Ser Leu	
1245	1250	1255	
aag gag ttc aac ctc cag aac	atg gga ttg cca gac	ttc cac atc	3897
Lys Glu Phe Asn Leu Gln Asn	Met Gly Leu Pro Asp	Phe His Ile	
1260	1265	1270	
cca gaa aac ctc ttc tta aaa	agc gat ggc cgg gtc	aaa tat acc	3942
Pro Glu Asn Leu Phe Leu Lys	Ser Asp Gly Arg Val	Lys Tyr Thr	
1275	1280	1285	
ttg aac aag aac agt ttg aaa	att gag att cct ttg	cct ttt ggt	3987



Leu	Asn	Lys	Asn	Ser	Leu	Lys	Ile	Glu	Ile	Pro	Leu	Pro	Phe	Gly		
1290						1295					1300					
ggc	aaa	tcc	tcc	aga	gat	cta	aag	atg	tta	gag	act	gtt	agg	aca	4032	
Gly	Lys	Ser	Ser	Arg	Asp	Leu	Lys	Met	Leu	Glu	Thr	Val	Arg	Thr		
1305						1310					1315					
cca	gcc	ctc	cac	ttc	aag	tct	gtg	gga	ttc	cat	ctg	cca	tct	cga	4077	
Pro	Ala	Leu	His	Phe	Lys	Ser	Val	Gly	Phe	His	Leu	Pro	Ser	Arg		
1320						1325					1330					
gag	ttc	caa	gtc	cct	act	ttt	acc	att	ccc	aag	ttg	tat	caa	ctg	4122	
Glu	Phe	Gln	Val	Pro	Thr	Phe	Thr	Ile	Pro	Lys	Leu	Tyr	Gln	Leu		
1335						1340					1345					
caa	gtg	cct	ctc	ctg	ggt	gtt	cta	gac	ctc	tcc	acg	aat	gtc	tac	4167	
Gln	Val	Pro	Leu	Leu	Gly	Val	Leu	Asp	Leu	Ser	Thr	Asn	Val	Tyr		
1350						1355					1360					
agc	aac	ttg	tac	aac	tgg	tcc	gcc	tcc	tac	agt	ggt	ggc	aac	acc	4212	
Ser	Asn	Leu	Tyr	Asn	Trp	Ser	Ala	Ser	Tyr	Ser	Gly	Gly	Asn	Thr		
1365						1370					1375					
agc	aca	gac	cat	ttc	agc	ctt	cgg	gct	cgt	tac	cac	atg	aag	gct	4257	
Ser	Thr	Asp	His	Phe	Ser	Leu	Arg	Ala	Arg	Tyr	His	Met	Lys	Ala		
1380						1385					1390					
gac	tct	gtg	gtt	gac	ctg	ctt	tcc	tac	aat	gtg	caa	gga	tct	gga	4302	
Asp	Ser	Val	Val	Asp	Leu	Leu	Ser	Tyr	Asn	Val	Gln	Gly	Ser	Gly		
1395						1400					1405					
gaa	aca	aca	tat	gac	cac	aag	aat	acg	ttc	aca	cta	tca	tgt	gat	4347	
Glu	Thr	Thr	Tyr	Asp	His	Lys	Asn	Thr	Phe	Thr	Leu	Ser	Cys	Asp		
1410						1415					1420					
ggg	tct	cta	cgc	cac	aaa	ttt	cta	gat	tcg	aat	atc	aaa	ttc	agt	4392	
Gly	Ser	Leu	Arg	His	Lys	Phe	Leu	Asp	Ser	Asn	Ile	Lys	Phe	Ser		
1425						1430					1435					
cat	gta	gaa	aaa	ctt	gga	aac	aac	cca	gtc	tca	aaa	ggt	tta	cta	4437	
His	Val	Glu	Lys	Leu	Gly	Asn	Asn	Pro	Val	Ser	Lys	Gly	Leu	Leu		
1440						1445					1450					
ata	ttc	gat	gca	tct	agt	tcc	tgg	gga	cca	cag	atg	tct	gct	tca	4482	
Ile	Phe	Asp	Ala	Ser	Ser	Ser	Trp	Gly	Pro	Gln	Met	Ser	Ala	Ser		
1455						1460					1465					
gtt	cat	ttg	gac	tcc	aaa	aag	aaa	cag	cat	ttg	ttt	gtc	aaa	gaa	4527	
Val	His	Leu	Asp	Ser	Lys	Lys	Lys	Gln	His	Leu	Phe	Val	Lys	Glu		
1470						1475					1480					
gtc	aag	att	gat	ggg	cag	ttc	aga	gtc	tct	tcg	ttc	tat	gct	aaa	4572	
Val	Lys	Ile	Asp	Gly	Gln	Phe	Arg	Val	Ser	Ser	Phe	Tyr	Ala	Lys		
1485						1490					1495					
ggc	aca	tat	ggc	ctg	tct	tgt	cag	agg	gat	cct	aac	act	ggc	cgg	4617	
Gly	Thr	Tyr	Gly	Leu	Ser	Cys	Gln	Arg	Asp	Pro	Asn	Thr	Gly	Arg		
1500						1505					1510					
ctc	aat	gga	gag	tcc	aac	ctg	agg	ttt	aac	tcc	tcc	tac	ctc	caa	4662	

Leu Asn Gly Glu Ser Asn Leu Arg Phe Asn Ser Ser Tyr Leu Gln	
1515 1520 1525	
ggc acc aac cag ata aca gga aga tat gaa gat gga acc ctc tcc	4707
Gly Thr Asn Gln Ile Thr Gly Arg Tyr Glu Asp Gly Thr Leu Ser	
1530 1535 1540	
ctc acc tcc acc tct gat ctg caa agt ggc atc att aaa aat act	4752
Leu Thr Ser Thr Ser Asp Leu Gln Ser Gly Ile Ile Lys Asn Thr	
1545 1550 1555	
gct tcc cta aag tat gag aac tac gag ctg act tta aaa tct gac	4797
Ala Ser Leu Lys Tyr Glu Asn Tyr Glu Leu Thr Leu Lys Ser Asp	
1560 1565 1570	
acc aat ggg aag tat aag aac ttt gcc act tct aac aag atg gat	4842
Thr Asn Gly Lys Tyr Lys Asn Phe Ala Thr Ser Asn Lys Met Asp	
1575 1580 1585	
atg acc ttc tct aag caa aat gca ctg ctg cgt tct gaa tat cag	4887
Met Thr Phe Ser Lys Gln Asn Ala Leu Leu Arg Ser Glu Tyr Gln	
1590 1595 1600	
gct gat tac gag tca ttg agg ttc ttc agc ctg ctt tct gga tca	4932
Ala Asp Tyr Glu Ser Leu Arg Phe Phe Ser Leu Leu Ser Gly Ser	
1605 1610 1615	
cta aat tcc cat ggt ctt gag tta aat gct gac atc tta ggc act	4977
Leu Asn Ser His Gly Leu Glu Leu Asn Ala Asp Ile Leu Gly Thr	
1620 1625 1630	
gac aaa att aat agt ggt gct cac aag gcg aca cta agg att ggc	5022
Asp Lys Ile Asn Ser Gly Ala His Lys Ala Thr Leu Arg Ile Gly	
1635 1640 1645	
caa gat gga ata tct acc agt gca acg acc aac ttg aag tgt agt	5067
Gln Asp Gly Ile Ser Thr Ser Ala Thr Thr Asn Leu Lys Cys Ser	
1650 1655 1660	
ctc ctg gtg ctg gag aat gag ctg aat gca gag ctt ggc ctc tct	5112
Leu Leu Val Leu Glu Asn Glu Leu Asn Ala Glu Leu Gly Leu Ser	
1665 1670 1675	
ggg gca tct atg aaa tta aca aca aat ggc cgc ttc agg gaa cac	5157
Gly Ala Ser Met Lys Leu Thr Thr Asn Gly Arg Phe Arg Glu His	
1680 1685 1690	
aat gca aaa ttc agt ctg gat ggg aaa gcc gcc ctc aca gag cta	5202
Asn Ala Lys Phe Ser Leu Asp Gly Lys Ala Ala Leu Thr Glu Leu	
1695 1700 1705	
tca ctg gga agt gct tat cag gcc atg att ctg ggt gtc gac agc	5247
Ser Leu Gly Ser Ala Tyr Gln Ala Met Ile Leu Gly Val Asp Ser	
1710 1715 1720	
aaa aac att ttc aac ttc aag gtc agt caa gaa gga ctt aag ctc	5292
Lys Asn Ile Phe Asn Phe Lys Val Ser Gln Glu Gly Leu Lys Leu	
1725 1730 1735	
tca aat gac atg atg ggc tca tat gct gaa atg aaa ttt gac cac	5337

Ser Asn Asp Met Met Gly Ser Tyr Ala Glu Met Lys Phe Asp His	
1740 1745 1750	
aca aac agt ctg aac att gca ggc tta tca ctg gac ttc tct tca	5382
Thr Asn Ser Leu Asn Ile Ala Gly Leu Ser Leu Asp Phe Ser Ser	
1755 1760 1765	
aaa ctt gac aac att tac agc tct gac aag ttt tat aag caa act	5427
Lys Leu Asp Asn Ile Tyr Ser Ser Asp Lys Phe Tyr Lys Gln Thr	
1770 1775 1780	
gtt aat tta cag cta cag ccc tat tct ctg gta act act tta aac	5472
Val Asn Leu Gln Leu Gln Pro Tyr Ser Leu Val Thr Thr Leu Asn	
1785 1790 1795	
agt gac ctg aaa tac aat gct ctg gat ctc acc aac aat ggg aaa	5517
Ser Asp Leu Lys Tyr Asn Ala Leu Asp Leu Thr Asn Asn Gly Lys	
1800 1805 1810	
cta cgg cta gaa ccc ctg aag ctg cat gtg gct ggt aac cta aaa	5562
Leu Arg Leu Glu Pro Leu Lys Leu His Val Ala Gly Asn Leu Lys	
1815 1820 1825	
gga gcc tac caa aat aat gaa ata aaa cac atc tat gcc atc tct	5607
Gly Ala Tyr Gln Asn Asn Glu Ile Lys His Ile Tyr Ala Ile Ser	
1830 1835 1840	
tct gct gcc tta tca gca agc tat aaa gca gac act gtt gct aag	5652
Ser Ala Ala Leu Ser Ala Ser Tyr Lys Ala Asp Thr Val Ala Lys	
1845 1850 1855	
gtt cag ggt gtg gag ttt agc cat cgg ctc aac aca gac atc gct	5697
Val Gln Gly Val Glu Phe Ser His Arg Leu Asn Thr Asp Ile Ala	
1860 1865 1870	
ggg ctg gct tca gcc att gac atg agc aca aac tat aat tca gac	5742
Gly Leu Ala Ser Ala Ile Asp Met Ser Thr Asn Tyr Asn Ser Asp	
1875 1880 1885	
tca ctg cat ttc agc aat gtc ttc cgt tct gta atg gcc ccg ttt	5787
Ser Leu His Phe Ser Asn Val Phe Arg Ser Val Met Ala Pro Phe	
1890 1895 1900	
acc atg acc atc gat gca cat aca aat ggc aat ggg aaa ctc gct	5832
Thr Met Thr Ile Asp Ala His Thr Asn Gly Asn Gly Lys Leu Ala	
1905 1910 1915	
ctc tgg gga gaa cat act ggg cag ctg tat agc aaa ttc ctg ttg	5877
Leu Trp Gly Glu His Thr Gly Gln Leu Tyr Ser Lys Phe Leu Leu	
1920 1925 1930	
aaa gca gaa cct ctg gca ttt act ttc tct cat gat tac aaa ggc	5922
Lys Ala Glu Pro Leu Ala Phe Thr Phe Ser His Asp Tyr Lys Gly	
1935 1940 1945	
tcc aca agt cat cat ctc gtg tct agg aaa agc atc agt gca gct	5967
Ser Thr Ser His His Leu Val Ser Arg Lys Ser Ile Ser Ala Ala	
1950 1955 1960	
ctt gaa cac aaa gtc agt gcc ctg ctt act cca gct gag cag aca	6012

Leu Glu	His Lys Val Ser Ala	Leu Leu Thr Pro Ala	Glu Gln Thr	
1965	1970	1975		
ggc acc	tgg aaa ctc aag acc	caa ttt aac aac aat	gaa tac agc	6057
Gly Thr	Trp Lys Leu Lys Thr	Gln Phe Asn Asn Asn	Glu Tyr Ser	
1980	1985	1990		
cag gac	ttg gat gct tac aac	act aaa gat aaa att	ggc gtg gag	6102
Gln Asp	Leu Asp Ala Tyr Asn	Thr Lys Asp Lys Ile	Gly Val Glu	
1995	2000	2005		
ctt act	gga cga act ctg gct	gac cta act cta cta	gac tcc cca	6147
Leu Thr	Gly Arg Thr Leu Ala	Asp Leu Thr Leu Leu	Asp Ser Pro	
2010	2015	2020		
att aaa	gtg cca ctt tta ctc	agt gag ccc atc aat	atc att gat	6192
Ile Lys	Val Pro Leu Leu Leu	Ser Glu Pro Ile Asn	Ile Ile Asp	
2025	2030	2035		
gct tta	gag atg aga gat gcc	gtt gag aag ccc caa	gaa ttt aca	6237
Ala Leu	Glu Met Arg Asp Ala	Val Glu Lys Pro Gln	Glu Phe Thr	
2040	2045	2050		
att gtt	gct ttt gta aag tat	gat aaa aac caa gat	gtt cac tcc	6282
Ile Val	Ala Phe Val Lys Tyr	Asp Lys Asn Gln Asp	Val His Ser	
2055	2060	2065		
att aac	ctc cca ttt ttt gag	acc ttg caa gaa tat	ttt gag agg	6327
Ile Asn	Leu Pro Phe Phe Glu	Thr Leu Gln Glu Tyr	Phe Glu Arg	
2070	2075	2080		
aat cga	caa acc att ata gtt	gta ctg gaa aac gta	cag aga aac	6372
Asn Arg	Gln Thr Ile Ile Val	Val Leu Glu Asn Val	Gln Arg Asn	
2085	2090	2095		
ctg aag	cac atc aat att gat	caa ttt gta aga aaa	tac aga gca	6417
Leu Lys	His Ile Asn Ile Asp	Gln Phe Val Arg Lys	Tyr Arg Ala	
2100	2105	2110		
gcc ctg	gga aaa ctc cca cag	caa gct aat gat tat	ctg aat tca	6462
Ala Leu	Gly Lys Leu Pro Gln	Gln Ala Asn Asp Tyr	Leu Asn Ser	
2115	2120	2125		
ttc aat	tgg gag aga caa gtt	tca cat gcc aag gag	aaa ctg act	6507
Phe Asn	Trp Glu Arg Gln Val	Ser His Ala Lys Glu	Lys Leu Thr	
2130	2135	2140		
gct ctc	aca aaa aag tat aga	att aca gaa aat gat	ata caa att	6552
Ala Leu	Thr Lys Lys Tyr Arg	Ile Thr Glu Asn Asp	Ile Gln Ile	
2145	2150	2155		
gca tta	gat gat gcc aaa atc	aac ttt aat gaa aaa	cta tct caa	6597
Ala Leu	Asp Asp Ala Lys Ile	Asn Phe Asn Glu Lys	Leu Ser Gln	
2160	2165	2170		
ctg cag	aca tat atg ata caa	ttt gat cag tat att	aaa gat agt	6642
Leu Gln	Thr Tyr Met Ile Gln	Phe Asp Gln Tyr Ile	Lys Asp Ser	
2175	2180	2185		
tat gat	tta cat gat ttg aaa	ata gct att gct aat	att att gat	6687

Tyr	Asp	Leu	His	Asp	Leu	Lys	Ile	Ala	Ile	Ala	Asn	Ile	Ile	Asp	
2190						2195					2200				
gaa	atc	att	gaa	aaa	tta	aaa	agt	ctt	gat	gag	cac	tat	cat	atc	6732
Glu	Ile	Ile	Glu	Lys	Leu	Lys	Ser	Leu	Asp	Glu	His	Tyr	His	Ile	
2205						2210					2215				
cgt	gta	aat	tta	gta	aaa	aca	atc	cat	gat	cta	cat	ttg	ttt	att	6777
Arg	Val	Asn	Leu	Val	Lys	Thr	Ile	His	Asp	Leu	His	Leu	Phe	Ile	
2220						2225					2230				
gaa	aat	att	gat	ttt	aac	aaa	agt	gga	agt	agt	act	gca	tcc	tg	6822
Glu	Asn	Ile	Asp	Phe	Asn	Lys	Ser	Gly	Ser	Ser	Thr	Ala	Ser	Trp	
2235						2240					2245				
att	caa	aat	gtg	gat	act	aag	tac	caa	atc	aga	atc	cag	ata	caa	6867
Ile	Gln	Asn	Val	Asp	Thr	Lys	Tyr	Gln	Ile	Arg	Ile	Gln	Ile	Gln	
2250						2255					2260				
gaa	aaa	ctg	cag	cag	ctt	aag	aga	cac	ata	cag	aat	ata	gac	atc	6912
Glu	Lys	Leu	Gln	Gln	Leu	Lys	Arg	His	Ile	Gln	Asn	Ile	Asp	Ile	
2265						2270					2275				
cag	cac	cta	gct	gga	aag	tta	aaa	caa	cac	att	gag	gct	att	gat	6957
Gln	His	Leu	Ala	Gly	Lys	Leu	Lys	Gln	His	Ile	Glu	Ala	Ile	Asp	
2280						2285					2290				
gtt	aga	gtg	ctt	tta	gat	caa	ttg	gga	act	aca	att	tca	ttt	gaa	7002
Val	Arg	Val	Leu	Leu	Asp	Gln	Leu	Gly	Thr	Thr	Ile	Ser	Phe	Glu	
2295						2300					2305				
aga	ata	aat	gat	gtt	ctt	gag	cat	gtc	aaa	cac	ttt	gtt	ata	aat	7047
Arg	Ile	Asn	Asp	Val	Leu	Glu	His	Val	Lys	His	Phe	Val	Ile	Asn	
2310						2315					2320				
ctt	att	ggg	gat	ttt	gaa	gta	gct	gag	aaa	atc	aat	gcc	ttc	aga	7092
Leu	Ile	Gly	Asp	Phe	Glu	Val	Ala	Glu	Lys	Ile	Asn	Ala	Phe	Arg	
2325						2330					2335				
gcc	aaa	gtc	cat	gag	tta	atc	gag	agg	tat	gaa	gta	gac	caa	caa	7137
Ala	Lys	Val	His	Glu	Leu	Ile	Glu	Arg	Tyr	Glu	Val	Asp	Gln	Gln	
2340						2345					2350				
atc	cag	gtt	tta	atg	gat	aaa	tta	gta	gag	ttg	gcc	cac	caa	tac	7182
Ile	Gln	Val	Leu	Met	Asp	Lys	Leu	Val	Glu	Leu	Ala	His	Gln	Tyr	
2355						2360					2365				
aag	ttg	aag	gag	act	att	cag	aag	cta	agc	aat	gtc	cta	caa	caa	7227
Lys	Leu	Lys	Glu	Thr	Ile	Gln	Lys	Leu	Ser	Asn	Val	Leu	Gln	Gln	
2370						2375					2380				
gtt	aag	ata	aaa	gat	tac	ttt	gag	aaa	ttg	gtt	gga	ttt	att	gat	7272
Val	Lys	Ile	Lys	Asp	Tyr	Phe	Glu	Lys	Leu	Val	Gly	Phe	Ile	Asp	
2385						2390					2395				
gat	gct	gtc	aag	aag	ctt	aat	gaa	tta	tct	ttt	aaa	aca	ttc	att	7317
Asp	Ala	Val	Lys	Lys	Leu	Asn	Glu	Leu	Ser	Phe	Lys	Thr	Phe	Ile	
2400						2405					2410				
gaa	gat	gtt	aac	aaa	ttc	ctt	gac	atg	ttg	ata	aag	aaa	tta	aag	7362

Glu Asp Val Asn Lys Phe Leu Asp Met Leu Ile Lys Lys Leu Lys	
2415 2420 2425	
tca ttt gat tac cac cag ttt gta gat gaa acc aat gac aaa atc	7407
Ser Phe Asp Tyr His Gln Phe Val Asp Glu Thr Asn Asp Lys Ile	
2430 2435 2440	
cgt gag gtg act cag aga ctc aat ggt gaa att cag gct ctg gaa	7452
Arg Glu Val Thr Gln Arg Leu Asn Gly Glu Ile Gln Ala Leu Glu	
2445 2450 2455	
cta cca caa aaa gct gaa gca tta aaa ctg ttt tta gag gaa acc	7497
Leu Pro Gln Lys Ala Glu Ala Leu Lys Leu Phe Leu Glu Glu Thr	
2460 2465 2470	
aag gcc aca gtt gca gtg tat ctg gaa agc cta cag gac acc aaa	7542
Lys Ala Thr Val Ala Val Tyr Leu Glu Ser Leu Gln Asp Thr Lys	
2475 2480 2485	
ata acc tta atc atc aat tgg tta cag gag gct tta agt tca gca	7587
Ile Thr Leu Ile Ile Asn Trp Leu Gln Glu Ala Leu Ser Ser Ala	
2490 2495 2500	
tct ttg gct cac atg aag gcc aaa ttc cga gag act cta gaa gat	7632
Ser Leu Ala His Met Lys Ala Lys Phe Arg Glu Thr Leu Glu Asp	
2505 2510 2515	
aca cga gac cga atg tat caa atg gac att cag cag gaa ctt caa	7677
Thr Arg Asp Arg Met Tyr Gln Met Asp Ile Gln Gln Glu Leu Gln	
2520 2525 2530	
cga tac ctg tct ctg gta ggc cag gtt tat agc aca ctt gtc acc	7722
Arg Tyr Leu Ser Leu Val Gly Gln Val Tyr Ser Thr Leu Val Thr	
2535 2540 2545	
tac att tct gat tgg tgg act ctt gct gct aag aac ctt act gac	7767
Tyr Ile Ser Asp Trp Trp Thr Leu Ala Ala Lys Asn Leu Thr Asp	
2550 2555 2560	
ttt gca gag caa tat tct atc caa gat tgg gct aaa cgt atg aaa	7812
Phe Ala Glu Gln Tyr Ser Ile Gln Asp Trp Ala Lys Arg Met Lys	
2565 2570 2575	
gca ttg gta gag caa ggg ttc act gtt cct gaa atc aag acc atc	7857
Ala Leu Val Glu Gln Gly Phe Thr Val Pro Glu Ile Lys Thr Ile	
2580 2585 2590	
ctt ggg acc atg cct gcc ttt gaa gtc agt ctt cag gct ctt cag	7902
Leu Gly Thr Met Pro Ala Phe Glu Val Ser Leu Gln Ala Leu Gln	
2595 2600 2605	
aaa gct acc ttc cag aca cct gat ttt ata gtc ccc cta aca gat	7947
Lys Ala Thr Phe Gln Thr Pro Asp Phe Ile Val Pro Leu Thr Asp	
2610 2615 2620	
ttg agg att cca tca gtt cag ata aac ttc aaa gac tta aaa aat	7992
Leu Arg Ile Pro Ser Val Gln Ile Asn Phe Lys Asp Leu Lys Asn	
2625 2630 2635	
ata aaa atc cca tcc agg ttt tcc aca cca gaa ttt acc atc ctt	8037

Ile Lys	Ile Pro Ser Arg Phe	Ser Thr Pro Glu Phe	Thr Ile Leu	
2640	2645	2650		
aac acc	ttc cac att cct tcc	ttt aca att gac ttt	gta gaa atg	8082
Asn Thr	Phe His Ile Pro Ser	Phe Thr Ile Asp Phe	Val Glu Met	
2655	2660	2665		
aaa gta	aag atc atc aga acc	att gac cag atg ctg	aac agt gag	8127
Lys Val	Lys Ile Ile Arg Thr	Ile Asp Gln Met Leu	Asn Ser Glu	
2670	2675	2680		
ctg cag	tgg ccc gtt cca gat	ata tat ctc agg gat	ctg aag gtg	8172
Leu Gln	Trp Pro Val Pro Asp	Ile Tyr Leu Arg Asp	Leu Lys Val	
2685	2690	2695		
gag gac	att cct cta gcg aga	atc acc ctg cca gac	ttc cgt tta	8217
Glu Asp	Ile Pro Leu Ala Arg	Ile Thr Leu Pro Asp	Phe Arg Leu	
2700	2705	2710		
cca gaa	atc gca att cca gaa	ttc ata atc cca act	ctc aac ctt	8262
Pro Glu	Ile Ala Ile Pro Glu	Phe Ile Ile Pro Thr	Leu Asn Leu	
2715	2720	2725		
aat gat	ttt caa gtt cct gac	ctt cac ata cca gaa	ttc cag ctt	8307
Asn Asp	Phe Gln Val Pro Asp	Leu His Ile Pro Glu	Phe Gln Leu	
2730	2735	2740		
ccc cac	atc tca cac aca att	gaa gta cct act ttt	ggc aag cta	8352
Pro His	Ile Ser His Thr Ile	Glu Val Pro Thr Phe	Gly Lys Leu	
2745	2750	2755		
tac agt	att ctg aaa atc caa	tct cct ctt ttc aca	tta gat gca	8397
Tyr Ser	Ile Leu Lys Ile Gln	Ser Pro Leu Phe Thr	Leu Asp Ala	
2760	2765	2770		
aat gct	gac ata ggg aat gga	acc acc tca gca aac	gaa gca ggt	8442
Asn Ala	Asp Ile Gly Asn Gly	Thr Thr Ser Ala Asn	Glu Ala Gly	
2775	2780	2785		
atc gca	gct tcc atc act gcc	aaa gga gag tcc aaa	tta gaa gtt	8487
Ile Ala	Ala Ser Ile Thr Ala	Lys Gly Glu Ser Lys	Leu Glu Val	
2790	2795	2800		
ctc aat	ttt gat ttt caa gca	aat gca caa ctc tca	aac cct aag	8532
Leu Asn	Phe Asp Phe Gln Ala	Asn Ala Gln Leu Ser	Asn Pro Lys	
2805	2810	2815		
att aat	ccg ctg gct ctg aag	gag tca gtg aag ttc	tcc agc aag	8577
Ile Asn	Pro Leu Ala Leu Lys	Glu Ser Val Lys Phe	Ser Ser Lys	
2820	2825	2830		
tac ctg	aga acg gag cat ggg	agt gaa atg ctg ttt	ttt gga aat	8622
Tyr Leu	Arg Thr Glu His Gly	Ser Glu Met Leu Phe	Phe Gly Asn	
2835	2840	2845		
gct att	gag gga aaa tca aac	aca gtg gca agt tta	cac aca gaa	8667
Ala Ile	Glu Gly Lys Ser Asn	Thr Val Ala Ser Leu	His Thr Glu	
2850	2855	2860		
aaa aat	aca ctg gag ctt agt	aat gga gtg att gtc	aag ata aac	8712

Lys	Asn	Thr	Leu	Glu	Leu	Ser	Asn	Gly	Val	Ile	Val	Lys	Ile	Asn	
2865						2870					2875				
aac	cag	ctt	acc	ctg	gat	agc	aac	act	aaa	tac	ttc	cac	aaa	ttg	8757
Asn	Gln	Leu	Thr	Leu	Asp	Ser	Asn	Thr	Lys	Tyr	Phe	His	Lys	Leu	
2880						2885					2890				
aac	atc	ccc	aaa	ctg	gac	ttc	tct	agt	cag	gct	gac	ctg	cgc	aac	8802
Asn	Ile	Pro	Lys	Leu	Asp	Phe	Ser	Ser	Gln	Ala	Asp	Leu	Arg	Asn	
2895						2900					2905				
gag	atc	aag	aca	ctg	ttg	aaa	gct	ggc	cac	ata	gca	tgg	act	tct	8847
Glu	Ile	Lys	Thr	Leu	Leu	Lys	Ala	Gly	His	Ile	Ala	Trp	Thr	Ser	
2910						2915					2920				
tct	gga	aaa	ggg	tca	tgg	aaa	tgg	gcc	tgc	ccc	aga	ttc	tca	gat	8892
Ser	Gly	Lys	Gly	Ser	Trp	Lys	Trp	Ala	Cys	Pro	Arg	Phe	Ser	Asp	
2925						2930					2935				
gag	gga	aca	cat	gaa	tca	caa	att	agt	ttc	acc	ata	gaa	gga	ccc	8937
Glu	Gly	Thr	His	Glu	Ser	Gln	Ile	Ser	Phe	Thr	Ile	Glu	Gly	Pro	
2940						2945					2950				
ctc	act	tcc	ttt	gga	ctg	tcc	aat	aag	atc	aat	agc	aaa	cac	cta	8982
Leu	Thr	Ser	Phe	Gly	Leu	Ser	Asn	Lys	Ile	Asn	Ser	Lys	His	Leu	
2955						2960					2965				
aga	gta	aac	caa	aac	ttg	gtt	tat	gaa	tct	ggc	tcc	ctc	aac	ttt	9027
Arg	Val	Asn	Gln	Asn	Leu	Val	Tyr	Glu	Ser	Gly	Ser	Leu	Asn	Phe	
2970						2975					2980				
tct	aaa	ctt	gaa	att	caa	tca	caa	gtc	gat	tcc	cag	cat	gtg	ggc	9072
Ser	Lys	Leu	Glu	Ile	Gln	Ser	Gln	Val	Asp	Ser	Gln	His	Val	Gly	
2985						2990					2995				
cac	agt	gtt	cta	act	gct	aaa	ggc	atg	gca	ctg	ttt	gga	gaa	ggg	9117
His	Ser	Val	Leu	Thr	Ala	Lys	Gly	Met	Ala	Leu	Phe	Gly	Glu	Gly	
3000						3005					3010				
aag	gca	gag	ttt	act	ggg	agg	cat	gat	gct	cat	tta	aat	gga	aag	9162
Lys	Ala	Glu	Phe	Thr	Gly	Arg	His	Asp	Ala	His	Leu	Asn	Gly	Lys	
3015						3020					3025				
gtt	att	gga	act	ttg	aaa	aat	tct	ctt	ttc	ttt	tca	gcc	cag	cca	9207
Val	Ile	Gly	Thr	Leu	Lys	Asn	Ser	Leu	Phe	Phe	Ser	Ala	Gln	Pro	
3030						3035					3040				
ttt	gag	atc	acg	gca	tcc	aca	aac	aat	gaa	ggg	aat	ttg	aaa	gtt	9252
Phe	Glu	Ile	Thr	Ala	Ser	Thr	Asn	Asn	Glu	Gly	Asn	Leu	Lys	Val	
3045						3050					3055				
cgt	ttt	cca	tta	agg	tta	aca	ggg	aag	ata	gac	ttc	ctg	aat	aac	9297
Arg	Phe	Pro	Leu	Arg	Leu	Thr	Gly	Lys	Ile	Asp	Phe	Leu	Asn	Asn	
3060						3065					3070				
tat	gca	ctg	ttt	ctg	agt	ccc	agt	gcc	cag	caa	gca	agt	tgg	caa	9342
Tyr	Ala	Leu	Phe	Leu	Ser	Pro	Ser	Ala	Gln	Gln	Ala	Ser	Trp	Gln	
3075						3080					3085				
gta	agt	gct	agg	ttc	aat	cag	tat	aag	tac	aac	caa	aat	ttc	tct	9387



Val	Ser	Ala	Arg	Phe	Asn	Gln	Tyr	Lys	Tyr	Asn	Gln	Asn	Phe	Ser	
3090						3095					3100				
gct	gga	aac	aac	gag	aac	att	atg	gag	gcc	cat	gta	gga	ata	aat	9432
Ala	Gly	Asn	Asn	Glu	Asn	Ile	Met	Glu	Ala	His	Val	Gly	Ile	Asn	
3105						3110					3115				
gga	gaa	gca	aat	ctg	gat	ttc	tta	aac	att	cct	tta	aca	att	cct	9477
Gly	Glu	Ala	Asn	Leu	Asp	Phe	Leu	Asn	Ile	Pro	Leu	Thr	Ile	Pro	
3120						3125					3130				
gaa	atg	cgt	cta	cct	tac	aca	ata	atc	aca	act	cct	cca	ctg	aaa	9522
Glu	Met	Arg	Leu	Pro	Tyr	Thr	Ile	Ile	Thr	Thr	Pro	Pro	Leu	Lys	
3135						3140					3145				
gat	ttc	tct	cta	tgg	gaa	aaa	aca	ggc	ttg	aag	gaa	ttc	ttg	aaa	9567
Asp	Phe	Ser	Leu	Trp	Glu	Lys	Thr	Gly	Leu	Lys	Glu	Phe	Leu	Lys	
3150						3155					3160				
acg	aca	aag	caa	tca	ttt	gat	tta	agt	gta	aaa	gct	cag	tat	aag	9612
Thr	Thr	Lys	Gln	Ser	Phe	Asp	Leu	Ser	Val	Lys	Ala	Gln	Tyr	Lys	
3165						3170					3175				
aaa	aac	aaa	cac	agg	cat	tcc	atc	aca	aat	cct	ttg	gct	gtg	ctt	9657
Lys	Asn	Lys	His	Arg	His	Ser	Ile	Thr	Asn	Pro	Leu	Ala	Val	Leu	
3180						3185					3190				
tgt	gag	ttt	atc	agt	cag	agc	atc	aaa	tcc	ttt	gac	agg	cat	ttt	9702
Cys	Glu	Phe	Ile	Ser	Gln	Ser	Ile	Lys	Ser	Phe	Asp	Arg	His	Phe	
3195						3200					3205				
gaa	aaa	aac	aga	aac	aat	gca	tta	gat	ttt	gtc	acc	aaa	tcc	tat	9747
Glu	Lys	Asn	Arg	Asn	Asn	Ala	Leu	Asp	Phe	Val	Thr	Lys	Ser	Tyr	
3210						3215					3220				
aat	gaa	aca	aaa	att	aag	ttt	gat	aag	tac	aaa	gct	gaa	aaa	tct	9792
Asn	Glu	Thr	Lys	Ile	Lys	Phe	Asp	Lys	Tyr	Lys	Ala	Glu	Lys	Ser	
3225						3230					3235				
cac	gac	gag	ctc	ccc	agg	acc	ttt	caa	att	cct	gga	tac	act	gtt	9837
His	Asp	Glu	Leu	Pro	Arg	Thr	Phe	Gln	Ile	Pro	Gly	Tyr	Thr	Val	
3240						3245					3250				
cca	gtt	gtc	aat	gtt	gaa	gtg	tct	cca	ttc	acc	ata	gag	atg	tcg	9882
Pro	Val	Val	Asn	Val	Glu	Val	Ser	Pro	Phe	Thr	Ile	Glu	Met	Ser	
3255						3260					3265				
gca	ttc	ggc	tat	gtg	ttc	cca	aaa	gca	gtc	agc	atg	cct	agt	ttc	9927
Ala	Phe	Gly	Tyr	Val	Phe	Pro	Lys	Ala	Val	Ser	Met	Pro	Ser	Phe	
3270						3275					3280				
tcc	atc	cta	ggt	tct	gac	gtc	cgt	gtg	cct	tca	tac	aca	tta	atc	9972
Ser	Ile	Leu	Gly	Ser	Asp	Val	Arg	Val	Pro	Ser	Tyr	Thr	Leu	Ile	
3285						3290					3295				
ctg	cca	tca	tta	gag	ctg	cca	gtc	ctt	cat	gtc	cct	aga	aat	ctc	10017
Leu	Pro	Ser	Leu	Glu	Leu	Pro	Val	Leu	His	Val	Pro	Arg	Asn	Leu	
3300						3305					3310				
aag	ctt	tct	ctt	cca	gat	ttc	aag	gaa	ttg	tgt	acc	ata	agc	cat	10062

Lys	Leu	Ser	Leu	Pro	Asp	Phe	Lys	Glu	Leu	Cys	Thr	Ile	Ser	His	
3315						3320					3325				
att	ttt	att	cct	gcc	atg	ggc	aat	att	acc	tat	gat	ttc	tcc	ttt	10107
Ile	Phe	Ile	Pro	Ala	Met	Gly	Asn	Ile	Thr	Tyr	Asp	Phe	Ser	Phe	
3330						3335					3340				
aaa	tca	agt	gtc	atc	aca	ctg	aat	acc	aat	gct	gaa	ctt	ttt	aac	10152
Lys	Ser	Ser	Val	Ile	Thr	Leu	Asn	Thr	Asn	Ala	Glu	Leu	Phe	Asn	
3345						3350					3355				
cag	tca	gat	att	gtt	gct	cat	ctc	ctt	tct	tca	tct	tca	tct	gtc	10197
Gln	Ser	Asp	Ile	Val	Ala	His	Leu	Leu	Ser	Ser	Ser	Ser	Ser	Val	
3360						3365					3370				
att	gat	gca	ctg	cag	tac	aaa	tta	gag	ggc	acc	aca	aga	ttg	aca	10242
Ile	Asp	Ala	Leu	Gln	Tyr	Lys	Leu	Glu	Gly	Thr	Thr	Arg	Leu	Thr	
3375						3380					3385				
aga	aaa	agg	gga	ttg	aag	tta	gcc	aca	gct	ctg	tct	ctg	agc	aac	10287
Arg	Lys	Arg	Gly	Leu	Lys	Leu	Ala	Thr	Ala	Leu	Ser	Leu	Ser	Asn	
3390						3395					3400				
aaa	ttt	gtg	gag	ggt	agt	cat	aac	agt	act	gtg	agc	tta	acc	acg	10332
Lys	Phe	Val	Glu	Gly	Ser	His	Asn	Ser	Thr	Val	Ser	Leu	Thr	Thr	
3405						3410					3415				
aaa	aat	atg	gaa	gtg	tca	gtg	gca	aca	acc	aca	aaa	gcc	caa	att	10377
Lys	Asn	Met	Glu	Val	Ser	Val	Ala	Thr	Thr	Thr	Lys	Ala	Gln	Ile	
3420						3425					3430				
cca	att	ttg	aga	atg	aat	ttc	aag	caa	gaa	ctt	aat	gga	aat	acc	10422
Pro	Ile	Leu	Arg	Met	Asn	Phe	Lys	Gln	Glu	Leu	Asn	Gly	Asn	Thr	
3435						3440					3445				
aag	tca	aaa	cct	act	gtc	tct	tcc	tcc	atg	gaa	ttt	aag	tat	gat	10467
Lys	Ser	Lys	Pro	Thr	Val	Ser	Ser	Ser	Met	Glu	Phe	Lys	Tyr	Asp	
3450						3455					3460				
ttc	aat	tct	tca	atg	ctg	tac	tct	acc	gct	aaa	gga	gca	gtt	gac	10512
Phe	Asn	Ser	Ser	Met	Leu	Tyr	Ser	Thr	Ala	Lys	Gly	Ala	Val	Asp	
3465						3470					3475				
cac	aag	ctt	agc	ttg	gaa	agc	ctc	acc	tct	tac	ttt	tcc	att	gag	10557
His	Lys	Leu	Ser	Leu	Glu	Ser	Leu	Thr	Ser	Tyr	Phe	Ser	Ile	Glu	
3480						3485					3490				
tca	tct	acc	aaa	gga	gat	gtc	aag	ggt	tcg	gtt	ctt	tct	cgg	gaa	10602
Ser	Ser	Thr	Lys	Gly	Asp	Val	Lys	Gly	Ser	Val	Leu	Ser	Arg	Glu	
3495						3500					3505				
tat	tca	gga	act	att	gct	agt	gag	gcc	aac	act	tac	ttg	aat	tcc	10647
Tyr	Ser	Gly	Thr	Ile	Ala	Ser	Glu	Ala	Asn	Thr	Tyr	Leu	Asn	Ser	
3510						3515					3520				
aag	agc	aca	cgg	tct	tca	gtg	aag	ctg	cag	ggc	act	tcc	aaa	att	10692
Lys	Ser	Thr	Arg	Ser	Ser	Val	Lys	Leu	Gln	Gly	Thr	Ser	Lys	Ile	
3525						3530					3535				
gat	gat	atc	tgg	aac	ctt	gaa	gta	aaa	gaa	aat	ttt	gct	gga	gaa	10737

Asp Asp	Ile Trp Asn Leu Glu	Val Lys Glu Asn Phe	Ala Gly Glu	
3540	3545	3550		
gcc aca	ctc caa cgc ata tat	tcc ctc tgg gag cac	agt acg aaa	10782
Ala Thr	Leu Gln Arg Ile Tyr	Ser Leu Trp Glu His	Ser Thr Lys	
3555	3560	3565		
aac cac	tta cag cta gag ggc	ctc ttt ttc acc aac	gga gaa cat	10827
Asn His	Leu Gln Leu Glu Gly	Leu Phe Phe Thr Asn	Gly Glu His	
3570	3575	3580		
aca agc	aaa gcc acc ctg gaa	ctc tct cca tgg caa	atg tca gct	10872
Thr Ser	Lys Ala Thr Leu Glu	Leu Ser Pro Trp Gln	Met Ser Ala	
3585	3590	3595		
ctt gtt	cag gtc cat gca agt	cag ccc agt tcc ttc	cat gat ttc	10917
Leu Val	Gln Val His Ala Ser	Gln Pro Ser Ser Phe	His Asp Phe	
3600	3605	3610		
cct gac	ctt ggc cag gaa gtg	gcc ctg aat gct aac	act aag aac	10962
Pro Asp	Leu Gly Gln Glu Val	Ala Leu Asn Ala Asn	Thr Lys Asn	
3615	3620	3625		
cag aag	atc aga tgg aaa aat	gaa gtc cgg att cat	tct ggg tct	11007
Gln Lys	Ile Arg Trp Lys Asn	Glu Val Arg Ile His	Ser Gly Ser	
3630	3635	3640		
ttc cag	agc cag gtc gag ctt	tcc aat gac caa gaa	aag gca cac	11052
Phe Gln	Ser Gln Val Glu Leu	Ser Asn Asp Gln Glu	Lys Ala His	
3645	3650	3655		
ctt gac	att gca gga tcc tta	gaa gga cac cta agg	ttc ctc aaa	11097
Leu Asp	Ile Ala Gly Ser Leu	Glu Gly His Leu Arg	Phe Leu Lys	
3660	3665	3670		
aat atc	atc cta cca gtc tat	gac aag agc tta tgg	gat ttc cta	11142
Asn Ile	Ile Leu Pro Val Tyr	Asp Lys Ser Leu Trp	Asp Phe Leu	
3675	3680	3685		
aag ctg	gat gta acc acc agc	att ggt agg aga cag	cat ctt cgt	11187
Lys Leu	Asp Val Thr Thr Ser	Ile Gly Arg Arg Gln	His Leu Arg	
3690	3695	3700		
gtt tca	act gcc ttt gtg tac	acc aaa aac ccc aat	ggc tat tca	11232
Val Ser	Thr Ala Phe Val Tyr	Thr Lys Asn Pro Asn	Gly Tyr Ser	
3705	3710	3715		
ttc tcc	atc cct gta aaa gtt	ttg gct gat aaa ttc	att att cct	11277
Phe Ser	Ile Pro Val Lys Val	Leu Ala Asp Lys Phe	Ile Ile Pro	
3720	3725	3730		
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Gly Leu	Lys Leu Asn Asp Leu	Asn Ser Val Leu Val	Met Pro Thr	
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Phe His	Val Pro Phe Thr Asp	Leu Gln Val Pro Ser	Cys Lys Leu	
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gac ttc	aga gaa ata caa atc	tat aag aag ctg aga	act tca tca	11412

Asp	Phe	Arg	Glu	Ile	Gln	Ile	Tyr	Lys	Lys	Leu	Arg	Thr	Ser	Ser	
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Phe	Ala	Leu	Asn	Leu	Pro	Thr	Leu	Pro	Glu	Val	Lys	Phe	Pro	Glu	
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Val	Asp	Val	Leu	Thr	Lys	Tyr	Ser	Gln	Pro	Glu	Asp	Ser	Leu	Ile	
3795						3800					3805				
ccc	ttt	ttt	gag	ata	acc	gtg	cct	gaa	tct	cag	tta	act	gtg	tcc	11547
Pro	Phe	Phe	Glu	Ile	Thr	Val	Pro	Glu	Ser	Gln	Leu	Thr	Val	Ser	
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cag	ttc	acg	ctt	cca	aaa	agt	gtt	tca	gat	ggc	att	gct	gct	ttg	11592
Gln	Phe	Thr	Leu	Pro	Lys	Ser	Val	Ser	Asp	Gly	Ile	Ala	Ala	Leu	
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Asp	Leu	Asn	Ala	Val	Ala	Asn	Lys	Ile	Ala	Asp	Phe	Glu	Leu	Pro	
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acc	atc	atc	gtg	cct	gag	cag	acc	att	gag	att	ccc	tcc	att	aag	11682
Thr	Ile	Ile	Val	Pro	Glu	Gln	Thr	Ile	Glu	Ile	Pro	Ser	Ile	Lys	
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Phe	Ser	Val	Pro	Ala	Gly	Ile	Ala	Ile	Pro	Ser	Phe	Gln	Ala	Leu	
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Thr	Ala	Arg	Phe	Glu	Val	Asp	Ser	Pro	Val	Tyr	Asn	Ala	Thr	Trp	
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Ser	Ala	Ser	Leu	Lys	Asn	Lys	Ala	Asp	Tyr	Val	Glu	Thr	Val	Leu	
3900						3905					3910				
gat	tcc	aca	tgc	agc	tca	acc	gta	cag	ttc	cta	gaa	tat	gaa	ctt	11862
Asp	Ser	Thr	Cys	Ser	Ser	Thr	Val	Gln	Phe	Leu	Glu	Tyr	Glu	Leu	
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Asn	Val	Leu	Gly	Thr	His	Lys	Ile	Glu	Asp	Gly	Thr	Leu	Ala	Ser	
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aag	act	aaa	gga	aca	ttt	gca	cac	cgt	gac	ttc	agt	gca	gaa	tat	11952
Lys	Thr	Lys	Gly	Thr	Phe	Ala	His	Arg	Asp	Phe	Ser	Ala	Glu	Tyr	
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Glu	Glu	Asp	Gly	Lys	Tyr	Glu	Gly	Leu	Gln	Glu	Trp	Glu	Gly	Lys	
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gcg	cac	ctc	aat	atc	aaa	agc	cca	gcg	ttc	acc	gat	ctc	cat	ctg	12042
Ala	His	Leu	Asn	Ile	Lys	Ser	Pro	Ala	Phe	Thr	Asp	Leu	His	Leu	
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Arg Tyr	Gln Lys Asp Lys Lys	Gly Ile Ser Thr Ser	Ala Ala Ser	
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cca gcc	gta ggc acc gtg ggc	atg gat atg gat gaa	gat gac gac	12132
Pro Ala	Val Gly Thr Val Gly	Met Asp Met Asp Glu	Asp Asp Asp	
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Phe Ser	Lys Trp Asn Phe Tyr	Tyr Ser Pro Gln Ser	Ser Pro Asp	
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Lys Lys	Leu Thr Ile Phe Lys	Thr Glu Leu Arg Val	Arg Glu Ser	
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Asp Glu	Glu Thr Gln Ile Lys	Val Asn Trp Glu Glu	Glu Ala Ala	
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Ser Gly	Leu Leu Thr Ser Leu	Lys Asp Asn Val Pro	Lys Ala Thr	
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Gly Val	Leu Tyr Asp Tyr Val	Asn Lys Tyr His Trp	Glu His Thr	
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Gly Leu	Thr Leu Arg Glu Val	Ser Ser Lys Leu Arg	Arg Asn Leu	
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Gln Asp	His Ala Glu Trp Val	Tyr Gln Gly Ala Ile	Arg Glu Ile	
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Asp Asp	Ile Asp Glu Arg Phe	Gln Lys Gly Ala Ser	Gly Thr Thr	
4125	4130	4135		
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Gly Thr	Tyr Gln Glu Trp Lys	Asp Lys Ala Gln Asn	Leu Tyr Gln	
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Glu Leu	Leu Thr Gln Glu Gly	Gln Ala Ser Phe Gln	Gly Leu Lys	
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Asp Asn	Val Phe Asp Gly Leu	Val Arg Val Thr Gln	Glu Phe His	
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Met Lys	Val Lys His Leu Ile	Asp Ser Leu Ile Asp	Phe Leu Asn	
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Phe Pro	Arg Phe Gln Phe Pro	Gly Lys Pro Gly Ile	Tyr Thr Arg	
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Glu Glu	Leu Cys Thr Met	Phe	Ile Arg Glu Val Gly	Thr Val Leu	
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Ser Gln	Val Tyr Ser Lys	Val	His Asn Gly Ser	Glu	Ile Leu Phe
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Ser Tyr	Phe Gln Asp Leu	Val	Ile Thr Leu Pro	Phe	Glu Leu Arg
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Lys His	Lys Leu Ile Asp	Val	Ile Ser Met Tyr	Arg	Glu Leu Leu
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Lys Asp	Leu Ser Lys Glu	Ala	Gln Glu Val Phe	Lys	Ala Ile Gln
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Ser Leu	Lys Thr Thr Glu	Val	Leu Arg Asn Leu	Gln	Asp Leu Leu
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Gln Phe	Ile Phe Gln Leu	Ile	Glu Asp Asn Ile	Lys	Gln Leu Lys
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Glu Met	Lys Phe Thr Tyr	Leu	Ile Asn Tyr Ile	Gln	Asp Glu Ile
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Glu Asn Val Ser Leu Val Cys Pro Lys Asp Ala Thr Arg Phe Lys His  
 35 40 45

Leu Arg Lys Tyr Thr Tyr Asn Tyr Glu Ala Glu Ser Ser Ser Gly Val  
50 55 60

Pro Gly Thr Ala Asp Ser Arg Ser Ala Thr Arg Ile Asn Cys Lys Val  
65 70 75 80

Glu Leu Glu Val Pro Gln Leu Cys Ser Phe Ile Leu Lys Thr Ser Gln  
85 90 95

Cys Ile Leu Lys Glu Val Tyr Gly Phe Asn Pro Glu Gly Lys Ala Leu  
100 105 110

Leu Lys Lys Thr Lys Asn Ser Glu Glu Phe Ala Ala Ala Met Ser Arg  
115 120 125

Tyr Glu Leu Lys Leu Ala Ile Pro Glu Gly Lys Gln Val Phe Leu Tyr  
130 135 140

Pro Glu Lys Asp Glu Pro Thr Tyr Ile Leu Asn Ile Lys Arg Gly Ile  
145 150 155 160

Ile Ser Ala Leu Leu Val Pro Pro Glu Thr Glu Glu Ala Lys Gln Val  
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Leu Phe Leu Asp Thr Val Tyr Gly Asn Cys Ser Thr His Phe Thr Val  
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Lys Thr Arg Lys Gly Asn Val Ala Thr Glu Ile Ser Thr Glu Arg Asp  
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Leu Gly Gln Cys Asp Arg Phe Lys Pro Ile Arg Thr Gly Ile Ser Pro  
210 215 220

Leu Ala Leu Ile Lys Gly Met Thr Arg Pro Leu Ser Thr Leu Ile Ser  
225 230 235 240

Ser Ser Gln Ser Cys Gln Tyr Thr Leu Asp Ala Lys Arg Lys His Val  
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Ala Glu Ala Ile Cys Lys Glu Gln His Leu Phe Leu Pro Phe Ser Tyr  
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Glu Asp Thr Pro Lys Ile Asn Ser Arg Phe Phe Gly Glu Gly Thr Lys  
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Lys Met Gly Leu Ala Phe Glu Ser Thr Lys Ser Thr Ser Pro Pro Lys  
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Gln Ala Glu Ala Val Leu Lys Thr Val Gln Glu Leu Lys Lys Leu Thr  
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Cys Gly Gln Pro Gln Cys Ser Thr His Ile Leu Gln Trp Leu Lys Arg  
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Val His Ala Asn Pro Leu Leu Ile Asp Val Val Thr Tyr Leu Val Ala  
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Glu Ile Gly Leu Glu Gly Lys Gly Phe Glu Pro Thr Leu Glu Ala Leu  
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Glu Val Ala Asn Met Gln Ala Glu Leu Val Ala Lys Pro Ser Val Ser  
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Val Glu Phe Val Thr Asn Met Gly Ile Ile Ile Pro Asp Phe Ala Arg  
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Ser Gly Val Gln Met Asn Thr Asn Phe Phe His Glu Ser Gly Leu Glu  
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Asp Leu Gln Ser Gly Ile Ile Lys Asn Thr Ala Ser Leu Lys Tyr  
1550 1555 1560

Glu Asn Tyr Glu Leu Thr Leu Lys Ser Asp Thr Asn Gly Lys Tyr  
1565 1570 1575

Lys Asn Phe Ala Thr Ser Asn Lys Met Asp Met Thr Phe Ser Lys  
1580 1585 1590

Gln Asn Ala Leu Leu Arg Ser Glu Tyr Gln Ala Asp Tyr Glu Ser  
1595 1600 1605

Leu Arg Phe Phe Ser Leu Leu Ser Gly Ser Leu Asn Ser His Gly  
1610 1615 1620

Leu Glu Leu Asn Ala Asp Ile Leu Gly Thr Asp Lys Ile Asn Ser  
1625 1630 1635

Gly Ala His Lys Ala Thr Leu Arg Ile Gly Gln Asp Gly Ile Ser  
1640 1645 1650

Thr Ser Ala Thr Thr Asn Leu Lys Cys Ser Leu Leu Val Leu Glu  
1655 1660 1665

Asn Glu Leu Asn Ala Glu Leu Gly Leu Ser Gly Ala Ser Met Lys  
1670 1675 1680

Leu Thr 1685	Thr Asn Gly Arg Phe 1690	Arg Glu His Asn Ala 1695	Lys Phe Ser
Leu Asp 1700	Gly Lys Ala Ala Leu 1705	Thr Glu Leu Ser Leu 1710	Gly Ser Ala
Tyr Gln 1715	Ala Met Ile Leu Gly 1720	Val Asp Ser Lys Asn 1725	Ile Phe Asn
Phe Lys 1730	Val Ser Gln Glu Gly 1735	Leu Lys Leu Ser Asn 1740	Asp Met Met
Gly Ser 1745	Tyr Ala Glu Met Lys 1750	Phe Asp His Thr Asn 1755	Ser Leu Asn
Ile Ala 1760	Gly Leu Ser Leu Asp 1765	Phe Ser Ser Lys Leu 1770	Asp Asn Ile
Tyr Ser 1775	Ser Asp Lys Phe Tyr 1780	Lys Gln Thr Val Asn 1785	Leu Gln Leu
Gln Pro 1790	Tyr Ser Leu Val Thr 1795	Thr Leu Asn Ser Asp 1800	Leu Lys Tyr
Asn Ala 1805	Leu Asp Leu Thr Asn 1810	Asn Gly Lys Leu Arg 1815	Leu Glu Pro
Leu Lys 1820	Leu His Val Ala Gly 1825	Asn Leu Lys Gly Ala 1830	Tyr Gln Asn
Asn Glu 1835	Ile Lys His Ile Tyr 1840	Ala Ile Ser Ser Ala 1845	Ala Leu Ser
Ala Ser 1850	Tyr Lys Ala Asp Thr 1855	Val Ala Lys Val Gln 1860	Gly Val Glu
Phe Ser 1865	His Arg Leu Asn Thr 1870	Asp Ile Ala Gly Leu 1875	Ala Ser Ala
Ile Asp 1880	Met Ser Thr Asn Tyr 1885	Asn Ser Asp Ser Leu 1890	His Phe Ser
Asn Val 1895	Phe Arg Ser Val Met 1900	Ala Pro Phe Thr Met 1905	Thr Ile Asp

Ala His 1910	Thr Asn Gly Asn Gly 1915	Lys Leu Ala Leu Trp 1920	Gly Glu His
Thr Gly 1925	Gln Leu Tyr Ser Lys 1930	Phe Leu Leu Lys Ala 1935	Glu Pro Leu
Ala Phe 1940	Thr Phe Ser His Asp 1945	Tyr Lys Gly Ser Thr 1950	Ser His His
Leu Val 1955	Ser Arg Lys Ser Ile 1960	Ser Ala Ala Leu Glu 1965	His Lys Val
Ser Ala 1970	Leu Leu Thr Pro Ala 1975	Glu Gln Thr Gly Thr 1980	Trp Lys Leu
Lys Thr 1985	Gln Phe Asn Asn Asn 1990	Glu Tyr Ser Gln Asp 1995	Leu Asp Ala
Tyr Asn 2000	Thr Lys Asp Lys Ile 2005	Gly Val Glu Leu Thr 2010	Gly Arg Thr
Leu Ala 2015	Asp Leu Thr Leu Leu 2020	Asp Ser Pro Ile Lys 2025	Val Pro Leu
Leu Leu 2030	Ser Glu Pro Ile Asn 2035	Ile Ile Asp Ala Leu 2040	Glu Met Arg
Asp Ala 2045	Val Glu Lys Pro Gln 2050	Glu Phe Thr Ile Val 2055	Ala Phe Val
Lys Tyr 2060	Asp Lys Asn Gln Asp 2065	Val His Ser Ile Asn 2070	Leu Pro Phe
Phe Glu 2075	Thr Leu Gln Glu Tyr 2080	Phe Glu Arg Asn Arg 2085	Gln Thr Ile
Ile Val 2090	Val Leu Glu Asn Val 2095	Gln Arg Asn Leu Lys 2100	His Ile Asn
Ile Asp 2105	Gln Phe Val Arg Lys 2110	Tyr Arg Ala Ala Leu 2115	Gly Lys Leu
Pro Gln 2120	Gln Ala Asn Asp Tyr 2125	Leu Asn Ser Phe Asn 2130	Trp Glu Arg



Gln Val 2135	Ser His Ala Lys	Glu 2140	Lys Leu Thr Ala	Leu 2145	Thr Lys Lys
Tyr Arg 2150	Ile Thr Glu Asn	Asp 2155	Ile Gln Ile Ala	Leu 2160	Asp Asp Ala
Lys Ile 2165	Asn Phe Asn Glu	Lys 2170	Leu Ser Gln Leu	Gln 2175	Thr Tyr Met
Ile Gln 2180	Phe Asp Gln Tyr	Ile 2185	Lys Asp Ser Tyr	Asp 2190	Leu His Asp
Leu Lys 2195	Ile Ala Ile Ala	Asn 2200	Ile Ile Asp Glu	Ile 2205	Ile Glu Lys
Leu Lys 2210	Ser Leu Asp Glu	His 2215	Tyr His Ile Arg	Val 2220	Asn Leu Val
Lys Thr 2225	Ile His Asp Leu	His 2230	Leu Phe Ile Glu	Asn 2235	Ile Asp Phe
Asn Lys 2240	Ser Gly Ser Ser	Thr 2245	Ala Ser Trp Ile	Gln 2250	Asn Val Asp
Thr Lys 2255	Tyr Gln Ile Arg	Ile 2260	Gln Ile Gln Glu	Lys 2265	Leu Gln Gln
Leu Lys 2270	Arg His Ile Gln	Asn 2275	Ile Asp Ile Gln	His 2280	Leu Ala Gly
Lys Leu 2285	Lys Gln His Ile	Glu 2290	Ala Ile Asp Val	Arg 2295	Val Leu Leu
Asp Gln 2300	Leu Gly Thr Thr	Ile 2305	Ser Phe Glu Arg	Ile 2310	Asn Asp Val
Leu Glu 2315	His Val Lys His	Phe 2320	Val Ile Asn Leu	Ile 2325	Gly Asp Phe
Glu Val 2330	Ala Glu Lys Ile	Asn 2335	Ala Phe Arg Ala	Lys 2340	Val His Glu
Leu Ile 2345	Glu Arg Tyr Glu	Val 2350	Asp Gln Gln Ile	Gln 2355	Val Leu Met

Asp	Lys	Leu	Val	Glu	Leu	Ala	His	Gln	Tyr	Lys	Leu	Lys	Glu	Thr
2360						2365					2370			
Ile	Gln	Lys	Leu	Ser	Asn	Val	Leu	Gln	Gln	Val	Lys	Ile	Lys	Asp
2375						2380					2385			
Tyr	Phe	Glu	Lys	Leu	Val	Gly	Phe	Ile	Asp	Asp	Ala	Val	Lys	Lys
2390						2395					2400			
Leu	Asn	Glu	Leu	Ser	Phe	Lys	Thr	Phe	Ile	Glu	Asp	Val	Asn	Lys
2405						2410					2415			
Phe	Leu	Asp	Met	Leu	Ile	Lys	Lys	Leu	Lys	Ser	Phe	Asp	Tyr	His
2420						2425					2430			
Gln	Phe	Val	Asp	Glu	Thr	Asn	Asp	Lys	Ile	Arg	Glu	Val	Thr	Gln
2435						2440					2445			
Arg	Leu	Asn	Gly	Glu	Ile	Gln	Ala	Leu	Glu	Leu	Pro	Gln	Lys	Ala
2450						2455					2460			
Glu	Ala	Leu	Lys	Leu	Phe	Leu	Glu	Glu	Thr	Lys	Ala	Thr	Val	Ala
2465						2470					2475			
Val	Tyr	Leu	Glu	Ser	Leu	Gln	Asp	Thr	Lys	Ile	Thr	Leu	Ile	Ile
2480						2485					2490			
Asn	Trp	Leu	Gln	Glu	Ala	Leu	Ser	Ser	Ala	Ser	Leu	Ala	His	Met
2495						2500					2505			
Lys	Ala	Lys	Phe	Arg	Glu	Thr	Leu	Glu	Asp	Thr	Arg	Asp	Arg	Met
2510						2515					2520			
Tyr	Gln	Met	Asp	Ile	Gln	Gln	Glu	Leu	Gln	Arg	Tyr	Leu	Ser	Leu
2525						2530					2535			
Val	Gly	Gln	Val	Tyr	Ser	Thr	Leu	Val	Thr	Tyr	Ile	Ser	Asp	Trp
2540						2545					2550			
Trp	Thr	Leu	Ala	Ala	Lys	Asn	Leu	Thr	Asp	Phe	Ala	Glu	Gln	Tyr
2555						2560					2565			
Ser	Ile	Gln	Asp	Trp	Ala	Lys	Arg	Met	Lys	Ala	Leu	Val	Glu	Gln
2570						2575					2580			

Gly	Phe	Thr	Val	Pro	Glu	Ile	Lys	Thr	Ile	Leu	Gly	Thr	Met	Pro
2585						2590					2595			
Ala	Phe	Glu	Val	Ser	Leu	Gln	Ala	Leu	Gln	Lys	Ala	Thr	Phe	Gln
2600						2605					2610			
Thr	Pro	Asp	Phe	Ile	Val	Pro	Leu	Thr	Asp	Leu	Arg	Ile	Pro	Ser
2615						2620					2625			
Val	Gln	Ile	Asn	Phe	Lys	Asp	Leu	Lys	Asn	Ile	Lys	Ile	Pro	Ser
2630						2635					2640			
Arg	Phe	Ser	Thr	Pro	Glu	Phe	Thr	Ile	Leu	Asn	Thr	Phe	His	Ile
2645						2650					2655			
Pro	Ser	Phe	Thr	Ile	Asp	Phe	Val	Glu	Met	Lys	Val	Lys	Ile	Ile
2660						2665					2670			
Arg	Thr	Ile	Asp	Gln	Met	Leu	Asn	Ser	Glu	Leu	Gln	Trp	Pro	Val
2675						2680					2685			
Pro	Asp	Ile	Tyr	Leu	Arg	Asp	Leu	Lys	Val	Glu	Asp	Ile	Pro	Leu
2690						2695					2700			
Ala	Arg	Ile	Thr	Leu	Pro	Asp	Phe	Arg	Leu	Pro	Glu	Ile	Ala	Ile
2705						2710					2715			
Pro	Glu	Phe	Ile	Ile	Pro	Thr	Leu	Asn	Leu	Asn	Asp	Phe	Gln	Val
2720						2725					2730			
Pro	Asp	Leu	His	Ile	Pro	Glu	Phe	Gln	Leu	Pro	His	Ile	Ser	His
2735						2740					2745			
Thr	Ile	Glu	Val	Pro	Thr	Phe	Gly	Lys	Leu	Tyr	Ser	Ile	Leu	Lys
2750						2755					2760			
Ile	Gln	Ser	Pro	Leu	Phe	Thr	Leu	Asp	Ala	Asn	Ala	Asp	Ile	Gly
2765						2770					2775			
Asn	Gly	Thr	Thr	Ser	Ala	Asn	Glu	Ala	Gly	Ile	Ala	Ala	Ser	Ile
2780						2785					2790			
Thr	Ala	Lys	Gly	Glu	Ser	Lys	Leu	Glu	Val	Leu	Asn	Phe	Asp	Phe
2795						2800					2805			

Gln Ala	Asn Ala	Gln Leu	Ser	Asn Pro	Lys Ile	Asn	Pro Leu	Ala	
2810			2815			2820			
Leu Lys	Glu Ser	Val Lys	Phe	Ser Ser	Lys Tyr	Leu	Arg Thr	Glu	
2825			2830			2835			
His Gly	Ser Glu	Met Leu	Phe	Phe Gly	Asn Ala	Ile	Glu Gly	Lys	
2840			2845			2850			
Ser Asn	Thr Val	Ala Ser	Leu	His Thr	Glu Lys	Asn	Thr Leu	Glu	
2855			2860			2865			
Leu Ser	Asn Gly	Val Ile	Val	Lys Ile	Asn Asn	Gln	Leu Thr	Leu	
2870			2875			2880			
Asp Ser	Asn Thr	Lys Tyr	Phe	His Lys	Leu Asn	Ile	Pro Lys	Leu	
2885			2890			2895			
Asp Phe	Ser Ser	Gln Ala	Asp	Leu Arg	Asn Glu	Ile	Lys Thr	Leu	
2900			2905			2910			
Leu Lys	Ala Gly	His Ile	Ala	Trp Thr	Ser Ser	Gly	Lys Gly	Ser	
2915			2920			2925			
Trp Lys	Trp Ala	Cys Pro	Arg	Phe Ser	Asp Glu	Gly	Thr His	Glu	
2930			2935			2940			
Ser Gln	Ile Ser	Phe Thr	Ile	Glu Gly	Pro Leu	Thr	Ser Phe	Gly	
2945			2950			2955			
Leu Ser	Asn Lys	Ile Asn	Ser	Lys His	Leu Arg	Val	Asn Gln	Asn	
2960			2965			2970			
Leu Val	Tyr Glu	Ser Gly	Ser	Leu Asn	Phe Ser	Lys	Leu Glu	Ile	
2975			2980			2985			
Gln Ser	Gln Val	Asp Ser	Gln	His Val	Gly His	Ser	Val Leu	Thr	
2990			2995			3000			
Ala Lys	Gly Met	Ala Leu	Phe	Gly Glu	Gly Lys	Ala	Glu Phe	Thr	
3005			3010			3015			
Gly Arg	His Asp	Ala His	Leu	Asn Gly	Lys Val	Ile	Gly Thr	Leu	
3020			3025			3030			

Lys Asn Ser Leu Phe Phe Ser Ala Gln Pro Phe Glu Ile Thr Ala  
 3035 3040 3045  
 Ser Thr Asn Asn Glu Gly Asn Leu Lys Val Arg Phe Pro Leu Arg  
 3050 3055 3060  
 Leu Thr Gly Lys Ile Asp Phe Leu Asn Asn Tyr Ala Leu Phe Leu  
 3065 3070 3075  
 Ser Pro Ser Ala Gln Gln Ala Ser Trp Gln Val Ser Ala Arg Phe  
 3080 3085 3090  
 Asn Gln Tyr Lys Tyr Asn Gln Asn Phe Ser Ala Gly Asn Asn Glu  
 3095 3100 3105  
 Asn Ile Met Glu Ala His Val Gly Ile Asn Gly Glu Ala Asn Leu  
 3110 3115 3120  
 Asp Phe Leu Asn Ile Pro Leu Thr Ile Pro Glu Met Arg Leu Pro  
 3125 3130 3135  
 Tyr Thr Ile Ile Thr Thr Pro Pro Leu Lys Asp Phe Ser Leu Trp  
 3140 3145 3150  
 Glu Lys Thr Gly Leu Lys Glu Phe Leu Lys Thr Thr Lys Gln Ser  
 3155 3160 3165  
 Phe Asp Leu Ser Val Lys Ala Gln Tyr Lys Lys Asn Lys His Arg  
 3170 3175 3180  
 His Ser Ile Thr Asn Pro Leu Ala Val Leu Cys Glu Phe Ile Ser  
 3185 3190 3195  
 Gln Ser Ile Lys Ser Phe Asp Arg His Phe Glu Lys Asn Arg Asn  
 3200 3205 3210  
 Asn Ala Leu Asp Phe Val Thr Lys Ser Tyr Asn Glu Thr Lys Ile  
 3215 3220 3225  
 Lys Phe Asp Lys Tyr Lys Ala Glu Lys Ser His Asp Glu Leu Pro  
 3230 3235 3240  
 Arg Thr Phe Gln Ile Pro Gly Tyr Thr Val Pro Val Val Asn Val  
 3245 3250 3255

Glu Val	Ser Pro Phe Thr	Ile	Glu Met Ser Ala	Phe	Gly Tyr Val
3260		3265		3270	
Phe Pro	Lys Ala Val Ser	Met	Pro Ser Phe Ser	Ile	Leu Gly Ser
3275		3280		3285	
Asp Val	Arg Val Pro Ser	Tyr	Thr Leu Ile Leu	Pro	Ser Leu Glu
3290		3295		3300	
Leu Pro	Val Leu His Val	Pro	Arg Asn Leu Lys	Leu	Ser Leu Pro
3305		3310		3315	
Asp Phe	Lys Glu Leu Cys	Thr	Ile Ser His Ile	Phe	Ile Pro Ala
3320		3325		3330	
Met Gly	Asn Ile Thr Tyr	Asp	Phe Ser Phe Lys	Ser	Ser Val Ile
3335		3340		3345	
Thr Leu	Asn Thr Asn Ala	Glu	Leu Phe Asn Gln	Ser	Asp Ile Val
3350		3355		3360	
Ala His	Leu Leu Ser Ser	Ser	Ser Ser Val Ile	Asp	Ala Leu Gln
3365		3370		3375	
Tyr Lys	Leu Glu Gly Thr	Thr	Arg Leu Thr Arg	Lys	Arg Gly Leu
3380		3385		3390	
Lys Leu	Ala Thr Ala Leu	Ser	Leu Ser Asn Lys	Phe	Val Glu Gly
3395		3400		3405	
Ser His	Asn Ser Thr Val	Ser	Leu Thr Thr Lys	Asn	Met Glu Val
3410		3415		3420	
Ser Val	Ala Thr Thr Thr	Lys	Ala Gln Ile Pro	Ile	Leu Arg Met
3425		3430		3435	
Asn Phe	Lys Gln Glu Leu	Asn	Gly Asn Thr Lys	Ser	Lys Pro Thr
3440		3445		3450	
Val Ser	Ser Ser Met Glu	Phe	Lys Tyr Asp Phe	Asn	Ser Ser Met
3455		3460		3465	
Leu Tyr	Ser Thr Ala Lys	Gly	Ala Val Asp His	Lys	Leu Ser Leu
3470		3475		3480	

Glu Ser Leu Thr Ser Tyr Phe Ser Ile Glu Ser Ser Thr Lys Gly  
 3485 3490 3495

Asp Val Lys Gly Ser Val Leu Ser Arg Glu Tyr Ser Gly Thr Ile  
 3500 3505 3510

Ala Ser Glu Ala Asn Thr Tyr Leu Asn Ser Lys Ser Thr Arg Ser  
 3515 3520 3525

Ser Val Lys Leu Gln Gly Thr Ser Lys Ile Asp Asp Ile Trp Asn  
 3530 3535 3540

Leu Glu Val Lys Glu Asn Phe Ala Gly Glu Ala Thr Leu Gln Arg  
 3545 3550 3555

Ile Tyr Ser Leu Trp Glu His Ser Thr Lys Asn His Leu Gln Leu  
 3560 3565 3570

Glu Gly Leu Phe Phe Thr Asn Gly Glu His Thr Ser Lys Ala Thr  
 3575 3580 3585

Leu Glu Leu Ser Pro Trp Gln Met Ser Ala Leu Val Gln Val His  
 3590 3595 3600

Ala Ser Gln Pro Ser Ser Phe His Asp Phe Pro Asp Leu Gly Gln  
 3605 3610 3615

Glu Val Ala Leu Asn Ala Asn Thr Lys Asn Gln Lys Ile Arg Trp  
 3620 3625 3630

Lys Asn Glu Val Arg Ile His Ser Gly Ser Phe Gln Ser Gln Val  
 3635 3640 3645

Glu Leu Ser Asn Asp Gln Glu Lys Ala His Leu Asp Ile Ala Gly  
 3650 3655 3660

Ser Leu Glu Gly His Leu Arg Phe Leu Lys Asn Ile Ile Leu Pro  
 3665 3670 3675

Val Tyr Asp Lys Ser Leu Trp Asp Phe Leu Lys Leu Asp Val Thr  
 3680 3685 3690

Thr Ser Ile Gly Arg Arg Gln His Leu Arg Val Ser Thr Ala Phe  
 3695 3700 3705

Val Tyr Thr Lys Asn Pro Asn Gly Tyr Ser Phe Ser Ile Pro Val	3710	3715	3720
Lys Val Leu Ala Asp Lys Phe Ile Ile Pro Gly Leu Lys Leu Asn	3725	3730	3735
Asp Leu Asn Ser Val Leu Val Met Pro Thr Phe His Val Pro Phe	3740	3745	3750
Thr Asp Leu Gln Val Pro Ser Cys Lys Leu Asp Phe Arg Glu Ile	3755	3760	3765
Gln Ile Tyr Lys Lys Leu Arg Thr Ser Ser Phe Ala Leu Asn Leu	3770	3775	3780
Pro Thr Leu Pro Glu Val Lys Phe Pro Glu Val Asp Val Leu Thr	3785	3790	3795
Lys Tyr Ser Gln Pro Glu Asp Ser Leu Ile Pro Phe Phe Glu Ile	3800	3805	3810
Thr Val Pro Glu Ser Gln Leu Thr Val Ser Gln Phe Thr Leu Pro	3815	3820	3825
Lys Ser Val Ser Asp Gly Ile Ala Ala Leu Asp Leu Asn Ala Val	3830	3835	3840
Ala Asn Lys Ile Ala Asp Phe Glu Leu Pro Thr Ile Ile Val Pro	3845	3850	3855
Glu Gln Thr Ile Glu Ile Pro Ser Ile Lys Phe Ser Val Pro Ala	3860	3865	3870
Gly Ile Ala Ile Pro Ser Phe Gln Ala Leu Thr Ala Arg Phe Glu	3875	3880	3885
Val Asp Ser Pro Val Tyr Asn Ala Thr Trp Ser Ala Ser Leu Lys	3890	3895	3900
Asn Lys Ala Asp Tyr Val Glu Thr Val Leu Asp Ser Thr Cys Ser	3905	3910	3915
Ser Thr Val Gln Phe Leu Glu Tyr Glu Leu Asn Val Leu Gly Thr	3920	3925	3930



His Lys	Ile Glu Asp Gly	Thr	Leu Ala Ser Lys	Thr	Lys Gly Thr
3935		3940		3945	
Phe Ala	His Arg Asp Phe	Ser	Ala Glu Tyr Glu	Glu	Asp Gly Lys
3950		3955		3960	
Tyr Glu	Gly Leu Gln Glu	Trp	Glu Gly Lys Ala	His	Leu Asn Ile
3965		3970		3975	
Lys Ser	Pro Ala Phe Thr	Asp	Leu His Leu Arg	Tyr	Gln Lys Asp
3980		3985		3990	
Lys Lys	Gly Ile Ser Thr	Ser	Ala Ala Ser Pro	Ala	Val Gly Thr
3995		4000		4005	
Val Gly	Met Asp Met Asp	Glu	Asp Asp Asp Phe	Ser	Lys Trp Asn
4010		4015		4020	
Phe Tyr	Tyr Ser Pro Gln	Ser	Ser Pro Asp Lys	Lys	Leu Thr Ile
4025		4030		4035	
Phe Lys	Thr Glu Leu Arg	Val	Arg Glu Ser Asp	Glu	Glu Thr Gln
4040		4045		4050	
Ile Lys	Val Asn Trp Glu	Glu	Glu Ala Ala Ser	Gly	Leu Leu Thr
4055		4060		4065	
Ser Leu	Lys Asp Asn Val	Pro	Lys Ala Thr Gly	Val	Leu Tyr Asp
4070		4075		4080	
Tyr Val	Asn Lys Tyr His	Trp	Glu His Thr Gly	Leu	Thr Leu Arg
4085		4090		4095	
Glu Val	Ser Ser Lys Leu	Arg	Arg Asn Leu Gln	Asp	His Ala Glu
4100		4105		4110	
Trp Val	Tyr Gln Gly Ala	Ile	Arg Glu Ile Asp	Asp	Ile Asp Glu
4115		4120		4125	
Arg Phe	Gln Lys Gly Ala	Ser	Gly Thr Thr Gly	Thr	Tyr Gln Glu
4130		4135		4140	
Trp Lys	Asp Lys Ala Gln	Asn	Leu Tyr Gln Glu	Leu	Leu Thr Gln
4145		4150		4155	

Glu Gly	Gln Ala Ser Phe	Gln Gly Leu Lys Asp	Asn Val Phe Asp
4160		4165	4170
Gly Leu	Val Arg Val Thr	Gln Glu Phe His Met	Lys Val Lys His
4175		4180	4185
Leu Ile	Asp Ser Leu Ile	Asp Phe Leu Asn Phe	Pro Arg Phe Gln
4190		4195	4200
Phe Pro	Gly Lys Pro Gly	Ile Tyr Thr Arg Glu	Glu Leu Cys Thr
4205		4210	4215
Met Phe	Ile Arg Glu Val	Gly Thr Val Leu Ser	Gln Val Tyr Ser
4220		4225	4230
Lys Val	His Asn Gly Ser	Glu Ile Leu Phe Ser	Tyr Phe Gln Asp
4235		4240	4245
Leu Val	Ile Thr Leu Pro	Phe Glu Leu Arg Lys	His Lys Leu Ile
4250		4255	4260
Asp Val	Ile Ser Met Tyr	Arg Glu Leu Leu Lys	Asp Leu Ser Lys
4265		4270	4275
Glu Ala	Gln Glu Val Phe	Lys Ala Ile Gln Ser	Leu Lys Thr Thr
4280		4285	4290
Glu Val	Leu Arg Asn Leu	Gln Asp Leu Leu Gln	Phe Ile Phe Gln
4295		4300	4305
Leu Ile	Glu Asp Asn Ile	Lys Gln Leu Lys Glu	Met Lys Phe Thr
4310		4315	4320
Tyr Leu	Ile Asn Tyr Ile	Gln Asp Glu Ile Asn	Thr Ile Phe Asn
4325		4330	4335
Asp Tyr	Ile Pro Tyr Val	Phe Lys Leu Leu Lys	Glu Asn Leu Cys
4340		4345	4350
Leu Asn	Leu His Lys Phe	Asn Glu Phe Ile Gln	Asn Glu Leu Gln
4355		4360	4365
Glu Ala	Ser Gln Glu Leu	Gln Gln Ile His Gln	Tyr Ile Met Ala
4370		4375	4380



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20				25				30								
cgc Arg	cag Gln	cag Gln 35	acc Thr	gag Glu	tgg Trp	cag Gln	agc Ser 40	ggc Gly	cag Gln	cgc Arg	tgg Trp	gaa Glu 45	ctg Leu	gca Ala	ctg Leu	204
ggt Gly	cgc Arg 50	ttt Phe	tgg Trp	gat Asp	tac Tyr	ctg Leu 55	cgc Arg	tgg Trp	gtg Val	cag Gln 60	aca Thr	ctg Leu	tct Ser	gag Glu	cag Gln	252
gtg Val 65	cag Gln	gag Glu	gag Glu	ctg Leu	ctc Leu 70	agc Ser	tcc Ser	cag Gln	gtc Val	acc Thr 75	cag Gln	gaa Glu	ctg Leu	agg Arg	gcg Ala 80	300
ctg Leu	atg Met	gac Asp	gag Glu	acc Thr 85	atg Met	aag Lys	gag Glu	ttg Leu 90	aag Lys	gcc Ala	tac Tyr	aaa Lys	tcg Ser	gaa Glu 95	ctg Leu	348
gag Glu	gaa Glu	caa Gln	ctg Leu 100	acc Thr	ccg Pro	gtg Val	gcg Ala	gag Glu 105	gag Glu	acg Thr	cgg Arg	gca Ala	cgg Arg 110	ctg Leu	tcc Ser	396
aag Lys	gag Glu 115	ctg Leu	cag Gln	gcg Ala	gcg Ala	cag Gln	gcc Ala 120	cgg Arg	ctg Leu	ggc Gly	gcg Ala	gac Asp 125	atg Met	gag Glu	gac Asp	444
gtg Val	tgc Cys 130	ggc Gly	cgc Arg	ctg Leu	gtg Val	cag Gln 135	tac Tyr	cgc Arg	ggc Gly	gag Glu	gtg Val 140	cag Gln	gcc Ala	atg Met	ctc Leu	492
ggc Gly 145	cag Gln	agc Ser	acc Thr	gag Glu	gag Glu 150	ctg Leu	cgg Arg	gtg Val	cgc Arg	ctc Leu 155	gcc Ala	tcc Ser	cac His	ctg Leu	cgc Arg 160	540
aag Lys	ctg Leu	cgt Arg	aag Lys	cgg Arg 165	ctc Leu	ctc Leu	cgc Arg	gat Asp	gcc Ala 170	gat Asp	gac Asp	ctg Leu	cag Gln	aag Lys 175	cgc Arg	588
ctg Leu	gca Ala	gtg Val	tac Tyr 180	cag Gln	gcc Ala	ggg Gly	gcc Ala	cgc Arg 185	gag Glu	ggc Gly	gcc Ala	gag Glu	cgc Arg 190	ggc Gly	ctc Leu	636
agc Ser	gcc Ala	atc Ile 195	cgc Arg	gag Glu	cgc Arg	ctg Leu	ggg Gly 200	ccc Pro	ctg Leu	gtg Val	gaa Glu	cag Gln 205	ggc Gly	cgc Arg	gtg Val	684
cgg Arg	gcc Ala 210	gcc Ala	act Thr	gtg Val	ggc Gly	tcc Ser 215	ctg Leu	gcc Ala	ggc Gly	cag Gln	ccg Pro 220	cta Leu	cag Gln	gag Glu	cgg Arg	732
gcc Ala 225	cag Gln	gcc Ala	tgg Trp	ggc Gly	gag Glu 230	cgg Arg	ctg Leu	cgc Arg	gcg Ala	cgg Arg 235	atg Met	gag Glu	gag Glu	atg Met	ggc Gly 240	780
agc Ser	cgg Arg	acc Thr	cgc Arg	gac Asp 245	cgc Arg	ctg Leu	gac Asp	gag Glu	gtg Val 250	aag Lys	gag Glu	cag Gln	gtg Val	gcg Ala 255	gag Glu	828
gtg Val	cgc Arg	gcc Ala	aag Lys	ctg Leu	gag Glu	gag Glu	cag Gln	gcc Ala	cag Gln	cag Gln	ata Ile	cgc Arg	ctg Leu	cag Gln	gcc Ala	876

[illegible]

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Met Lys Val Leu Trp Ala Ala Leu Leu Val Thr Phe Leu Ala Gly Cys  
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Gln Ala Lys Val Glu Gln Ala Val Glu Thr Glu Pro Glu Pro Glu Leu  
20 25 30

Arg Gln Gln Thr Glu Trp Gln Ser Gly Gln Arg Trp Glu Leu Ala Leu  
35 40 45

Gly Arg Phe Trp Asp Tyr Leu Arg Trp Val Gln Thr Leu Ser Glu Gln  
50 55 60

Val Gln Glu Glu Leu Leu Ser Ser Gln Val Thr Gln Glu Leu Arg Ala  
65 70 75 80

Leu Met Asp Glu Thr Met Lys Glu Leu Lys Ala Tyr Lys Ser Glu Leu  
85 90 95

Glu Glu Gln Leu Thr Pro Val Ala Glu Glu Thr Arg Ala Arg Leu Ser  
100 105 110

Lys Glu Leu Gln Ala Ala Gln Ala Arg Leu Gly Ala Asp Met Glu Asp  
115 120 125

Val Cys Gly Arg Leu Val Gln Tyr Arg Gly Glu Val Gln Ala Met Leu  
130 135 140

Gly Gln Ser Thr Glu Glu Leu Arg Val Arg Leu Ala Ser His Leu Arg

145                      150                      155                      160  
 Lys Leu Arg Lys Arg Leu Leu Arg Asp Ala Asp Asp Leu Gln Lys Arg  
                                  165                      170                      175  
 Leu Ala Val Tyr Gln Ala Gly Ala Arg Glu Gly Ala Glu Arg Gly Leu  
                                  180                      185                      190  
 Ser Ala Ile Arg Glu Arg Leu Gly Pro Leu Val Glu Gln Gly Arg Val  
                                  195                      200                      205  
 Arg Ala Ala Thr Val Gly Ser Leu Ala Gly Gln Pro Leu Gln Glu Arg  
                                  210                      215                      220  
 Ala Gln Ala Trp Gly Glu Arg Leu Arg Ala Arg Met Glu Glu Met Gly  
                                  225                      230                      235                      240  
 Ser Arg Thr Arg Asp Arg Leu Asp Glu Val Lys Glu Gln Val Ala Glu  
                                  245                      250                      255  
 Val Arg Ala Lys Leu Glu Glu Gln Ala Gln Gln Ile Arg Leu Gln Ala  
                                  260                      265                      270  
 Glu Ala Phe Gln Ala Arg Leu Lys Ser Trp Phe Glu Pro Leu Val Glu  
                                  275                      280                      285  
 Asp Met Gln Arg Gln Trp Ala Gly Leu Val Glu Lys Val Gln Ala Ala  
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 Val Gly Thr Ser Ala Ala Pro Val Pro Ser Asp Asn His  
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 gtg agg gct ctg tcc att gtc ctc ccc atc gcc acg gag ctg ggt ctc 95  
   Val Arg Ala Leu Ser Ile Val Leu Pro Ile Ala Thr Glu Leu Gly Leu  
                                  20                      25                      30  
 tgg tct cgg ggg cag ctg tgt gac aga gcg tgc ctc tcc cta cgg tgc 143  
   Trp Ser Arg Gly Gln Leu Cys Asp Arg Ala Cys Leu Ser Leu Arg Cys  
                                  35                      40                      45  
 tcc tcg tct tcc ttt gcc tgg ggg tct tcc ttc tat gga aga act ggc 191



Ser Ser Ser Ser Phe Ala Trp Gly Ser Ser Phe Tyr Gly Arg Thr Gly  
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 ggc tta aga aca tca aca gca tca act ttg aca acc ccg tct atc aga 239  
 Gly Leu Arg Thr Ser Thr Ala Ser Thr Leu Thr Thr Pro Ser Ile Arg  
 65 70 75  
 aga cca cag agg atg agg tcc aca ttt gcc aca acc agg acg gct aca 287  
 Arg Pro Gln Arg Met Arg Ser Thr Phe Ala Thr Thr Arg Thr Ala Thr  
 80 85 90 95  
 gct acc cct cga gac aga tgg tca gtc tgg agg atg acg tgg cgt gaa 335  
 Ala Thr Pro Arg Asp Arg Trp Ser Val Trp Arg Met Thr Trp Arg Glu  
 100 105 110  
 cat ctg cct gga gtc ccg ccc ctg ccc aga acc ctt cct gag acc tcg 383  
 His Leu Pro Gly Val Pro Pro Leu Pro Arg Thr Leu Pro Glu Thr Ser  
 115 120 125  
 ccg gcc ttg ttt tat tca aag aca gag aag acc aaa gca ttg cct gcc 431  
 Pro Ala Leu Phe Tyr Ser Lys Thr Glu Lys Thr Lys Ala Leu Pro Ala  
 130 135 140  
 aga gct ttg ttt tat ata ttt att cat ctg gga ggc aga aca ggc ttc 479  
 Arg Ala Leu Phe Tyr Ile Phe Ile His Leu Gly Gly Arg Thr Gly Phe  
 145 150 155  
 gga cag tgc cca tgc aat ggc ttg ggt tgg gat ttt ggt ttc ttc ctt 527  
 Gly Gln Cys Pro Cys Asn Gly Leu Gly Trp Asp Phe Gly Phe Phe Leu  
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 Ser Cys Glu Gly

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Ser Arg Gly Gln Leu Cys Asp Arg Ala Cys Leu Ser Leu Arg Cys Ser  
 35 40 45

Ser Ser Ser Phe Ala Trp Gly Ser Ser Phe Tyr Gly Arg Thr Gly Gly  
 50 55 60

Leu Arg Thr Ser Thr Ala Ser Thr Leu Thr Thr Pro Ser Ile Arg Arg  
 65 70 75 80

Pro Gln Arg Met Arg Ser Thr Phe Ala Thr Thr Arg Thr Ala Thr Ala  
 85 90 95

Thr Pro Arg Asp Arg Trp Ser Val Trp Arg Met Thr Trp Arg Glu His  
 100 105 110

Leu Pro Gly Val Pro Pro Leu Pro Arg Thr Leu Pro Glu Thr Ser Pro  
 115 120 125

Ala Leu Phe Tyr Ser Lys Thr Glu Lys Thr Lys Ala Leu Pro Ala Arg  
 130 135 140

Ala Leu Phe Tyr Ile Phe Ile His Leu Gly Gly Arg Thr Gly Phe Gly  
 145 150 155 160

Gln Cys Pro Cys Asn Gly Leu Gly Trp Asp Phe Gly Phe Phe Leu Ser  
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Cys Glu Gly

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 Leu Leu Leu Trp Thr Arg Gly Thr Gln Gly Ser Glu Leu Asp Pro Lys  
 10 15 20 25

ggg cag cac gtc tgt gtg gcc agc agc ccc tct gct gag ctg cag tgc 149  
 Gly Gln His Val Cys Val Ala Ser Ser Pro Ser Ala Glu Leu Gln Cys  
 30 35 40

tgc gca ggc tgg agg cag aag gat caa gaa tgc acc atc ccc atc tgt 197  
 Cys Ala Gly Trp Arg Gln Lys Asp Gln Glu Cys Thr Ile Pro Ile Cys  
 45 50 55

gag ggg ccg gac gcc tgc cag aaa gac gag gtg tgt gtg aag ccg ggc 245  
 Glu Gly Pro Asp Ala Cys Gln Lys Asp Glu Val Cys Val Lys Pro Gly  
 60 65 70

ctc tgt cga tgc aag cct gga ttc ttt ggg gcc cac tgc agc tcc cgc 293  
 Leu Cys Arg Cys Lys Pro Gly Phe Phe Gly Ala His Cys Ser Ser Arg  
 75 80 85

tgc ccg ggc cag tac tgg ggc ccc gac tgc cgt gag agc tgc ccc tgc 341  
 Cys Pro Gly Gln Tyr Trp Gly Pro Asp Cys Arg Glu Ser Cys Pro Cys  
 90 95 100 105

cac ccg cac ggc cag tgc gag cca gcc acg ggc gcg tgc cag tgc cag 389  
 His Pro His Gly Gln Cys Glu Pro Ala Thr Gly Ala Cys Gln Cys Gln

110										115					120					
gcc	gac	cgc	tgg	gga	gcc	cgc	tgc	gag	ttc	ccg	tgc	gcc	tgc	ggc	ccc	437				
Ala	Asp	Arg	Trp	Gly	Ala	Arg	Cys	Glu	Phe	Pro	Cys	Ala	Cys	Gly	Pro					
			125					130					135							
cac	ggg	cgc	tgc	gac	ccc	gcg	acc	ggc	gtg	tgc	cac	tgc	gaa	ccc	ggc	485				
His	Gly	Arg	Cys	Asp	Pro	Ala	Thr	Gly	Val	Cys	His	Cys	Glu	Pro	Gly					
			140				145					150								
tgg	tgg	tgc	tcc	acg	tgc	cgc	cgc	ccg	tgc	cag	tgc	aac	acc	gcg	gcg	533				
Trp	Trp	Ser	Ser	Thr	Cys	Arg	Arg	Pro	Cys	Gln	Cys	Asn	Thr	Ala	Ala					
	155					160					165									
gcg	cgc	tgc	gag	cag	gcc	acg	ggc	gcc	tgc	gtg	tgc	aag	ccg	ggc	tgg	581				
Ala	Arg	Cys	Glu	Gln	Ala	Thr	Gly	Ala	Cys	Val	Cys	Lys	Pro	Gly	Trp					
170					175				180						185					
tgg	ggg	cgc	cgc	tgc	agc	ttc	cgc	tgc	aac	tgc	cac	ggc	tcc	ccg	tgc	629				
Trp	Gly	Arg	Arg	Cys	Ser	Phe	Arg	Cys	Asn	Cys	His	Gly	Ser	Pro	Cys					
				190					195					200						
gag	cag	gac	tcc	ggc	cgc	tgc	gcc	tgc	cgg	ccg	ggc	tgg	tgg	ggt	ccc	677				
Glu	Gln	Asp	Ser	Gly	Arg	Cys	Ala	Cys	Arg	Pro	Gly	Trp	Trp	Gly	Pro					
			205				210					215								
gaa	tgc	cag	cag	cag	tgc	gag	tgt	gtg	cgg	ggc	cgc	tgc	agc	gcc	gcc	725				
Glu	Cys	Gln	Gln	Gln	Cys	Glu	Cys	Val	Arg	Gly	Arg	Cys	Ser	Ala	Ala					
			220				225					230								
tcc	ggc	gag	tgc	acc	tgc	ccg	ccc	ggc	ttc	cgc	gga	gcg	cgc	tgc	gag	773				
Ser	Gly	Glu	Cys	Thr	Cys	Pro	Pro	Gly	Phe	Arg	Gly	Ala	Arg	Cys	Glu					
	235					240					245									
ctg	ccc	tgc	ccg	gca	ggc	agc	cac	ggg	gtg	cag	tgc	gca	cac	agc	tgt	821				
Leu	Pro	Cys	Pro	Ala	Gly	Ser	His	Gly	Val	Gln	Cys	Ala	His	Ser	Cys					
250					255				260						265					
ggc	cgc	tgc	aaa	cac	aat	gag	ccg	tgc	tct	cca	gac	aca	ggc	agc	tgt	869				
Gly	Arg	Cys	Lys	His	Asn	Glu	Pro	Cys	Ser	Pro	Asp	Thr	Gly	Ser	Cys					
				270					275					280						
gag	tcc	tgc	gag	ccg	ggc	tgg	aac	ggg	acc	cag	tgc	cag	cag	ccc	tgc	917				
Glu	Ser	Cys	Glu	Pro	Gly	Trp	Asn	Gly	Thr	Gln	Cys	Gln	Gln	Pro	Cys					
			285					290					295							
ctg	cct	ggc	acc	ttt	ggc	gag	agc	tgc	gaa	cag	cag	tgc	cct	cac	tgc	965				
Leu	Pro	Gly	Thr	Phe	Gly	Glu	Ser	Cys	Glu	Gln	Gln	Cys	Pro	His	Cys					
		300					305					310								
cga	cat	ggg	gag	gcc	tgt	gag	cca	gat	act	ggc	cac	tgt	cag	cgc	tgt	1013				
Arg	His	Gly	Glu	Ala	Cys	Glu	Pro	Asp	Thr	Gly	His	Cys	Gln	Arg	Cys					
	315					320					325									
gac	cct	ggc	tgg	ctg	ggg	ccc	agg	tgt	gaa	gac	ccc	tgc	ccc	act	ggt	1061				
Asp	Pro	Gly	Trp	Leu	Gly	Pro	Arg	Cys	Glu	Asp	Pro	Cys	Pro	Thr	Gly					
330					335					340					345					
acc	ttt	ggg	gaa	gac	tgt	ggc	tct	acc	tgc	ccc	acc	tgt	gtt	cag	ggg	1109				
Thr	Phe	Gly	Glu	Asp	Cys	Gly	Ser	Thr	Cys	Pro	Thr	Cys	Val	Gln	Gly					

350										355					360					
tcc	tgt	gat	act	gtg	aca	ggg	gac	tgt	gtc	tgc	agt	gcc	ggc	tac	tgg		1157			
Ser	Cys	Asp	Thr	Val	Thr	Gly	Asp	Cys	Val	Cys	Ser	Ala	Gly	Tyr	Trp					
			365					370					375							
ggg	ccc	agc	tgc	aac	gcc	tcc	tgc	cca	gcc	ggt	ttc	cat	gga	aac	aac		1205			
Gly	Pro	Ser	Cys	Asn	Ala	Ser	Cys	Pro	Ala	Gly	Phe	His	Gly	Asn	Asn					
		380					385					390								
tgc	tca	gtt	cct	tgt	gaa	tgc	cca	gag	gga	ctc	tgc	cac	cct	gtc	tct		1253			
Cys	Ser	Val	Pro	Cys	Glu	Cys	Pro	Glu	Gly	Leu	Cys	His	Pro	Val	Ser					
		395				400					405									
ggg	tcc	tgc	cag	cca	ggc	tct	ggc	agt	cgg	gac	act	gcc	ctc	atc	gtg		1301			
Gly	Ser	Cys	Gln	Pro	Gly	Ser	Gly	Ser	Arg	Asp	Thr	Ala	Leu	Ile	Val					
410					415					420					425					
ggc	agc	ctt	gtg	cct	ctg	ctg	ctg	ctc	ttc	ctg	ggt	ctt	gcc	tgc	tgt		1349			
Gly	Ser	Leu	Val	Pro	Leu	Leu	Leu	Leu	Phe	Leu	Gly	Leu	Ala	Cys	Cys					
				430					435						440					
gcc	tgc	tgc	tgc	tgg	gcc	ccc	cga	tca	gac	ctc	aag	gac	agg	cca	gcg		1397			
Ala	Cys	Cys	Cys	Trp	Ala	Pro	Arg	Ser	Asp	Leu	Lys	Asp	Arg	Pro	Ala					
			445					450					455							
aga	gat	gga	gct	acc	gtg	tcc	agg	atg	aag	ctg	cag	gtc	tgg	ggg	aca		1445			
Arg	Asp	Gly	Ala	Thr	Val	Ser	Arg	Met	Lys	Leu	Gln	Val	Trp	Gly	Thr					
		460					465					470								
ctg	acc	agc	ttg	ggc	tcc	acg	ctg	ccc	tgc	cgt	tcc	ctc	agc	tcc	cac		1493			
Leu	Thr	Ser	Leu	Gly	Ser	Thr	Leu	Pro	Cys	Arg	Ser	Leu	Ser	Ser	His					
	475					480					485									
aag	cta	ccc	tgg	gtg	aca	gtc	tca	cat	cac	gac	ccg	gag	gtc	ccc	ttc		1541			
Lys	Leu	Pro	Trp	Val	Thr	Val	Ser	His	His	Asp	Pro	Glu	Val	Pro	Phe					
490					495					500					505					
aac	cac	agc	ttc	atc	gag	ccg	ccc	tct	gcc	ggc	tgg	gcc	act	gat	gac		1589			
Asn	His	Ser	Phe	Ile	Glu	Pro	Pro	Ser	Ala	Gly	Trp	Ala	Thr	Asp	Asp					
			510						515					520						
tcc	ttc	tca	tcc	gat	cct	gag	tct	gga	gag	gca	gat	gag	gtt	cct	gcc		1637			
Ser	Phe	Ser	Ser	Asp	Pro	Glu	Ser	Gly	Glu	Ala	Asp	Glu	Val	Pro	Ala					
			525					530					535							
tac	tgt	gtg	cca	ccc	caa	gaa	ggg	atg	gtc	cct	gtg	gcc	cag	gca	ggg		1685			
Tyr	Cys	Val	Pro	Pro	Gln	Glu	Gly	Met	Val	Pro	Val	Ala	Gln	Ala	Gly					
		540					545					550								
tcg	tca	gag	gcc	agc	ctg	gct	gca	ggt	gct	ttc	ccg	ccc	cct	gag	gac		1733			
Ser	Ser	Glu	Ala	Ser	Leu	Ala	Ala	Gly	Ala	Phe	Pro	Pro	Pro	Glu	Asp					
		555				560					565									
gcc	tcc	acg	cca	ttc	gcc	atc	ccg	cgc	acc	tcc	agc	cta	gct	cgg	gcc		1781			
Ala	Ser	Thr	Pro	Phe	Ala	Ile	Pro	Arg	Thr	Ser	Ser	Leu	Ala	Arg	Ala					
570					575					580					585					
aag	cgg	cca	tcg	gtc	tcc	ttc	gcg	gaa	ggt	acc	aag	ttt	gca	cca	cag		1829			
Lys	Arg	Pro	Ser	Val	Ser	Phe	Ala	Glu	Gly	Thr	Lys	Phe	Ala	Pro	Gln					



830

gatggactag actgtgctgt gtgctggaaa atgatcccgg ggccaggaca gacaaaccag 2609  
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 aagggttgcc tgcagggact tttgctctgc tgtcctggac cctgtgtgcc tcataagggc 2789  
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Ser Ser Pro Ser Ala Glu Leu Gln Cys Cys Ala Gly Trp Arg Gln Lys  
35 40 45

Asp Gln Glu Cys Thr Ile Pro Ile Cys Glu Gly Pro Asp Ala Cys Gln  
50 55 60

Lys Asp Glu Val Cys Val Lys Pro Gly Leu Cys Arg Cys Lys Pro Gly  
65 70 75 80

Phe Phe Gly Ala His Cys Ser Ser Arg Cys Pro Gly Gln Tyr Trp Gly  
85 90 95

Pro Asp Cys Arg Glu Ser Cys Pro Cys His Pro His Gly Gln Cys Glu

100	105	110
Pro Ala Thr Gly Ala Cys Gln Cys Gln Ala Asp Arg Trp Gly Ala Arg		
115	120	125
Cys Glu Phe Pro Cys Ala Cys Gly Pro His Gly Arg Cys Asp Pro Ala		
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Thr Gly Val Cys His Cys Glu Pro Gly Trp Trp Ser Ser Thr Cys Arg		
145	150	155 160
Arg Pro Cys Gln Cys Asn Thr Ala Ala Ala Arg Cys Glu Gln Ala Thr		
	165	170 175
Gly Ala Cys Val Cys Lys Pro Gly Trp Trp Gly Arg Arg Cys Ser Phe		
	180	185 190
Arg Cys Asn Cys His Gly Ser Pro Cys Glu Gln Asp Ser Gly Arg Cys		
	195	200 205
Ala Cys Arg Pro Gly Trp Trp Gly Pro Glu Cys Gln Gln Gln Cys Glu		
	210	215 220
Cys Val Arg Gly Arg Cys Ser Ala Ala Ser Gly Glu Cys Thr Cys Pro		
225	230	235 240
Pro Gly Phe Arg Gly Ala Arg Cys Glu Leu Pro Cys Pro Ala Gly Ser		
	245	250 255
His Gly Val Gln Cys Ala His Ser Cys Gly Arg Cys Lys His Asn Glu		
	260	265 270
Pro Cys Ser Pro Asp Thr Gly Ser Cys Glu Ser Cys Glu Pro Gly Trp		
	275	280 285
Asn Gly Thr Gln Cys Gln Gln Pro Cys Leu Pro Gly Thr Phe Gly Glu		
	290	295 300
Ser Cys Glu Gln Gln Cys Pro His Cys Arg His Gly Glu Ala Cys Glu		
305	310	315 320
Pro Asp Thr Gly His Cys Gln Arg Cys Asp Pro Gly Trp Leu Gly Pro		
	325	330 335
Arg Cys Glu Asp Pro Cys Pro Thr Gly Thr Phe Gly Glu Asp Cys Gly		

340

345

350

Ser Thr Cys Pro Thr Cys Val Gln Gly Ser Cys Asp Thr Val Thr Gly  
 355 360 365

Asp Cys Val Cys Ser Ala Gly Tyr Trp Gly Pro Ser Cys Asn Ala Ser  
 370 375 380

Cys Pro Ala Gly Phe His Gly Asn Asn Cys Ser Val Pro Cys Glu Cys  
 385 390 395 400

Pro Glu Gly Leu Cys His Pro Val Ser Gly Ser Cys Gln Pro Gly Ser  
 405 410 415

Gly Ser Arg Asp Thr Ala Leu Ile Val Gly Ser Leu Val Pro Leu Leu  
 420 425 430

Leu Leu Phe Leu Gly Leu Ala Cys Cys Ala Cys Cys Cys Trp Ala Pro  
 435 440 445

Arg Ser Asp Leu Lys Asp Arg Pro Ala Arg Asp Gly Ala Thr Val Ser  
 450 455 460

Arg Met Lys Leu Gln Val Trp Gly Thr Leu Thr Ser Leu Gly Ser Thr  
 465 470 475 480

Leu Pro Cys Arg Ser Leu Ser Ser His Lys Leu Pro Trp Val Thr Val  
 485 490 495

Ser His His Asp Pro Glu Val Pro Phe Asn His Ser Phe Ile Glu Pro  
 500 505 510

Pro Ser Ala Gly Trp Ala Thr Asp Asp Ser Phe Ser Ser Asp Pro Glu  
 515 520 525

Ser Gly Glu Ala Asp Glu Val Pro Ala Tyr Cys Val Pro Pro Gln Glu  
 530 535 540

Gly Met Val Pro Val Ala Gln Ala Gly Ser Ser Glu Ala Ser Leu Ala  
 545 550 555 560

Ala Gly Ala Phe Pro Pro Pro Glu Asp Ala Ser Thr Pro Phe Ala Ile  
 565 570 575

Pro Arg Thr Ser Ser Leu Ala Arg Ala Lys Arg Pro Ser Val Ser Phe



580

585

590

Ala Glu Gly Thr Lys Phe Ala Pro Gln Ser Arg Arg Ser Ser Gly Glu  
595 600 605

Leu Ser Ser Pro Leu Arg Lys Pro Lys Arg Leu Ser Arg Gly Ala Gln  
610 615 620

Ser Gly Pro Glu Gly Arg Glu Ala Glu Glu Ser Thr Gly Pro Asp Glu  
625 630 635 640

Ala Glu Ala Pro Glu Ser Phe Pro Ala Ala Ala Ser Pro Gly Asp Ser  
645 650 655

Ala Thr Gly His Arg Arg Pro Pro Leu Gly Ser Arg Thr Val Ala Glu  
660 665 670

His Val Glu Ala Ile Glu Gly Ser Val Gln Glu Ser Ser Gly Pro Val  
675 680 685

Thr Thr Ile Tyr Met Leu Ala Gly Lys Pro Arg Gly Ser Glu Gly Pro  
690 695 700

Val Arg Ser Val Phe Arg His Phe Gly Ser Phe Gln Lys Gly Gln Ala  
705 710 715 720

Glu Ala Lys Val Lys Arg Ala Ile Pro Lys Pro Pro Arg Gln Ala Leu  
725 730 735

Asn Arg Lys Lys Gly Ser Pro Gly Leu Ala Ser Gly Ser Val Gly Gln  
740 745 750

Ser Pro Asn Ser Ala Pro Lys Ala Gly Leu Pro Gly Ala Thr Gly Pro  
755 760 765

Met Ala Val Arg Pro Glu Glu Ala Val Arg Gly Leu Gly Ala Gly Thr  
770 775 780

Glu Ser Ser Arg Arg Ala Gln Glu Pro Val Ser Gly Cys Gly Ser Pro  
785 790 795 800

Glu Gln Asp Pro Gln Lys Gln Ala Glu Glu Glu Arg Gln Glu Glu Pro  
805 810 815

Glu Tyr Glu Asn Val Val Pro Ile Ser Arg Pro Pro Glu Pro

820

825

830

<210> 135 <211> 4503 <212> DNA <213> Caenorhabditis elegans <220>  
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ata tgt cgg att ggt tgt cag ttc aat tat caa gca tct gca acc tgc	96
Ile Cys Arg Ile Gly Cys Gln Phe Asn Tyr Gln Ala Ser Ala Thr Cys	
20 25 30	
aat tct gtt ggg gcg tct gtc gca act gta gtc acc gct gat aat cct	144
Asn Ser Val Gly Ala Ser Val Ala Thr Val Val Thr Ala Asp Asn Pro	
35 40 45	
cga cgt tca gtg tct ttc cct att tat tgt gca agc tta gca tat gca	192
Arg Arg Ser Val Ser Phe Pro Ile Tyr Cys Ala Ser Leu Ala Tyr Ala	
50 55 60	
agc agt aaa tac aac aat atc tcg tca gaa aca gtc gga atc gcc cat	240
Ser Ser Lys Tyr Asn Asn Ile Ser Ser Glu Thr Val Gly Ile Ala His	
65 70 75 80	
ctg gaa cat aga caa tcc ctt gcg aaa gac ttc acg tgt tcc aat gcg	288
Leu Glu His Arg Gln Ser Leu Ala Lys Asp Phe Thr Cys Ser Asn Ala	
85 90 95	
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Ser Gln Glu Thr Phe Gly Gln Arg Ser Phe Val Ile Leu Ala Glu Asn	
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aca aaa gac act gat gtg atg aaa agt tcc gtg gat aac gtt ttc aga	384
Thr Lys Asp Thr Asp Val Met Lys Ser Ser Val Asp Asn Val Phe Arg	
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aac aag aat agt atc ttc tac cag ctt agt cdt ttt gtc aac tct gct	432
Asn Lys Asn Ser Ile Phe Tyr Gln Leu Ser Pro Phe Val Asn Ser Ala	
130 135 140	
cct cca cag cga tat gca aac ttt ttc gct gtt ctg aat aaa tgt tcc	480
Pro Pro Gln Arg Tyr Ala Asn Phe Phe Ala Val Leu Asn Lys Cys Ser	
145 150 155 160	
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Glu Thr Ala Gln Thr Glu Gln Ser Ser Asp Tyr Gly Thr Phe Leu Thr	
165 170 175	
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Lys Val Met Asn Val Thr Ser Lys Ser Gln Gln Arg Pro Asn Asp Pro	
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Ser Asp Pro Val Lys Val Thr Asn Phe Leu Pro Gln Ala Ile Ala Gly	
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gcg aac gcc tat tct gac att ctg ctt gtg att aat tat aac gtg tct	672

Ala	Asn	Ala	Tyr	Ser	Asp	Ile	Leu	Leu	Val	Ile	Asn	Tyr	Asn	Val	Ser		
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Thr	Ile	Thr	Asp	Asn	Asp	Ala	Thr	Glu	Ile	Lys	Ser	Ala	Leu	Glu	Lys		
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Gln	Arg	Ser	Arg	Leu	Tyr	Ile	Leu	Phe	Val	Gln	Thr	Tyr	Phe	Asn	Tyr		
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Thr	Asp	Thr	Tyr	Tyr	Ala	Met	Asn	Lys	Leu	Ala	Ile	Ala	Ser	Gly	Gly		
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Val	Ala	Ile	Arg	Val	Asn	Thr	Tyr	Asp	Asp	Leu	Ser	Thr	Phe	Phe	Ala		
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Gln	Tyr	Phe	Pro	Leu	Leu	Val	Ala	Asn	Asp	Ile	Val	Ala	Lys	Ala	Tyr		
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Ala	Glu	Asn	Pro	Arg	Pro	Gly	Val	Ala	Leu	Asn	Asn	Val	Asn	Leu	Leu		
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gct	caa	caa	tat	gtt	ctt	ctt	gta	aca	aat	gag	gat	tca	ttg	gga	gat		1008
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Gly	Pro	Val	Pro	Ala	Ser	Val	Thr	Val	Thr	Gly	Ile	Asn	Val	Thr	Gln		
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Ala	Gly	Lys	Phe	Thr	Pro	Leu	Phe	Tyr	Ser	Ser	Ser	Ser	Phe	Asp	Asp		
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ggg	tca	aaa	att	acc	att	aca	tac	agt	gat	gca	aca	aac	cca	gca	aat		1200
Gly	Ser	Lys	Ile	Thr	Ile	Thr	Tyr	Ser	Asp	Ala	Thr	Asn	Pro	Ala	Asn		
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cca	att	tat	aat	gga	aat	att	acg	tct	gct	tta	aat	gac	tgc	aaa	tat		1248
Pro	Ile	Tyr	Asn	Gly	Asn	Ile	Thr	Ser	Ala	Leu	Asn	Asp	Cys	Lys	Tyr		
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Tyr	Ala	Asn	Thr	Lys	Asn	Tyr	Ala	Trp	Ala	Cys	Ser	Ile		Glu	Ile		
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Ala	Leu	Leu	Leu	Gln	Phe	Ser	Met	Arg	Asn	Ile	Gln	Ile	Asp	Arg	Val		
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Ser	Cys	Ile	Cys	Pro	Leu	Gln	Trp	Thr	Gly	Thr	Asn	Cys	Gln	Ala	Pro		
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Gln	Cys	Leu	Asn	Gly	Gly	Thr	Leu	Lys	Thr	Asp	Asp	Thr	Cys	Ala	Cys		
			500					505					510				
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Leu	Asp	Ser	Phe	Lys	Gly	Asp	Phe	Cys	Glu	Thr	Ser	Thr	Ser	Val	Cys		
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gct	gga	gct	ccg	aca	tct	ccg	gac	tat	cgc	tct	gaa	ctg	agt	tca	ttg	1632	
Ala	Gly	Ala	Pro	Thr	Ser	Pro	Asp	Tyr	Arg	Ser	Glu	Leu	Ser	Ser	Leu		
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Val	Ile	Val	Ala	Asp	Val	Asn	Ala	Leu	Ser	Thr	Ser	Ser	Leu	Ser	Asn		
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Tyr	Thr	Ser	Asn	Ser	Asn	Val	Thr	Ile	Asp	Pro	Asp	Phe	Leu	Ile	Arg		
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Glu	Ser	Gln	Asn	Ser	Ile	Thr	Leu	Ser	Leu	Val	Gly	Asn	Gly	Ile	Pro		
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ggt	ggt	ccc	tta	ttc	caa	tca	cta	caa	tac	caa	gtg	aac	act	cca	caa	2160	
Val	Val	Pro	Leu	Phe	Gln	Ser	Leu	Gln	Tyr	Gln	Val	Asn	Thr	Pro	Gln		
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Arg	Val	Phe	Asn	Val	Phe	Gln	Thr	Gly	Phe	Tyr	Asn	Ser	Pro	Thr	Gln		
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Ile	Ser	Ile	Pro	Ala	Asp	Ser	Thr	Phe	Asp	Asn	Ala	Lys	Pro	Asn	Leu		
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Phe	Val	His	Val	Tyr	Glu	Gly	Arg	Ile	Asn	Tyr	Ser	Asp	Pro	Ser	Thr		
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Asn	Gly	Asn	Glu	Val	Gly	Asn	Ser	Thr	Ile	Tyr	Phe	Leu	Pro	Tyr	Asp		
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ccc	aca	aaa	cct	atc	aac	tta	att	gtg	aat	aat	aat	ggc	acg	acc	ggt	2400	
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Gln	Leu	Pro	Lys	Thr	Asp	Pro	Ser	Asn	Phe	Pro	Tyr	Leu	Thr	Leu	Gly		
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Thr	Arg	Lys	Ser	Gly	Ala	Ser	Cys	Phe	Tyr	Ser	His	Phe	Thr	Val	Leu		
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gat	gtc	tgc	tcc	caa	agc	aca	aca	att	gga	tat	cag	gca	cag	ttg	acc	2736	
Asp	Val	Cys	Ser	Gln	Ser	Thr	Thr	Ile	Gly	Tyr	Gln	Ala	Gln	Leu	Thr		
			900					905					910				
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Thr	Arg	Thr	Ser	Thr	Leu	Thr	Asn	Arg	Ile	Gln	Gln	Phe	Val	Leu	Thr		
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Asn Ile Asn Ser Ala Asp Cys Ser Cys Asn Arg Phe Asn Asp Thr  
 1385 1390 1395  
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136

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Asn Ser Val Gly Ala Ser Val Ala Thr Val Val Thr Ala Asp Asn Pro  
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Arg Arg Ser Val Ser Phe Pro Ile Tyr Cys Ala Ser Leu Ala Tyr Ala  
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Ser Ser Lys Tyr Asn Asn Ile Ser Ser Glu Thr Val Gly Ile Ala His  
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Leu Glu His Arg Gln Ser Leu Ala Lys Asp Phe Thr Cys Ser Asn Ala  
85 90 95

Ser Gln Glu Thr Phe Gly Gln Arg Ser Phe Val Ile Leu Ala Glu Asn



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Glu Thr Ala Gln Thr Glu Gln Ser Ser Asp Tyr Gly Thr Phe Leu Thr 165 170 175		
Lys Val Met Asn Val Thr Ser Lys Ser Gln Gln Arg Pro Asn Asp Pro 180 185 190		
Ser Asp Pro Val Lys Val Thr Asn Phe Leu Pro Gln Ala Ile Ala Gly 195 200 205		
Ala Asn Ala Tyr Ser Asp Ile Leu Leu Val Ile Asn Tyr Asn Val Ser 210 215 220		
Thr Ile Thr Asp Asn Asp Ala Thr Glu Ile Lys Ser Ala Leu Glu Lys 225 230 235 240		
Gln Arg Ser Arg Leu Tyr Ile Leu Phe Val Gln Thr Tyr Phe Asn Tyr 245 250 255		
Thr Asp Thr Tyr Tyr Ala Met Asn Lys Leu Ala Ile Ala Ser Gly Gly 260 265 270		
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Gln Tyr Phe Pro Leu Leu Val Ala Asn Asp Ile Val Ala Lys Ala Tyr 290 295 300		
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100-371330-1030

[illegible]

580

585

590

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Tyr Thr Ser Asn Ser Asn Val Thr Ile Asp Pro Asp Phe Leu Ile Arg  
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Leu Ala Val Arg Arg Ala Glu Val Arg Val Leu Ser Thr Ser Gly Thr  
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Glu Ser Gln Asn Ser Ile Thr Leu Ser Leu Val Gly Asn Gly Ile Pro  
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Ile Ala Ile Asn Gly Ala Lys Asp Phe Glu Asn Tyr Leu Thr Tyr Tyr  
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Val Val Pro Leu Phe Gln Ser Leu Gln Tyr Gln Val Asn Thr Pro Gln  
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Arg Val Phe Asn Val Phe Gln Thr Gly Gln Phe Tyr Asn Ser Thr Gln  
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Ile Ser Ile Pro Ala Asp Ser Thr Phe Asp Asn Ala Lys Pro Asn Leu  
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Phe Val His Val Tyr Glu Gly Arg Ile Asn Tyr Ser Asp Pro Ser Thr  
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Asn Gly Asn Glu Val Gly Asn Ser Thr Ile Tyr Phe Leu Pro Tyr Asp  
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Pro Thr Lys Pro Ile Asn Leu Ile Val Asn Asn Asn Gly Thr Thr Gly  
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14-00000

[illegible]

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Lys Ser Ile Ala Gln Tyr Phe Lys Thr Phe Gly Tyr Ser His Tyr				
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Ile Met Leu Thr Asn Asn Leu Asn Gly Ser Leu Gln Leu Asn Asn				
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Gly Ser Leu Leu Phe Glu Asp Phe Gln Gln Tyr Ser Asp Glu Ser				
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Met Ile Met Ser Lys Leu Pro Leu Tyr Trp Ser Leu Arg Ala Thr				
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Pro Ser Arg Thr Ala Ser Val Ser Asn Ala Leu Ser Lys Ile Leu				
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Ala Ser Tyr Asn Arg Asn Gly Thr Glu Phe Lys Asn Ser Val Ser				
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Tyr Ser Ala Phe Ala Lys Asn Ala Asn Gln Thr Ile Val Thr Ser				
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Leu Gln Lys Phe Ser Thr Asp Val Thr Thr Ala Arg Asp Tyr Tyr				
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Ser Gly Leu Ser Asp Met Tyr Glu Ser Thr Gln Pro Gln Gly Ser				
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Asn Glu Leu Pro Pro Lys Pro Asp Gln Leu Ser Cys Val Tyr Gly				
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Leu Gln Ser Asn Ile Lys Ile Ala Ile Asp Arg Ser Asn Ser Ser				

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Asn Pro Glu Val Asn Thr Ile Met Asn Asn Phe Leu Val Asn Phe				
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Arg Leu Gly Phe Asn Tyr Ile Glu Asn Asp Asp Asn Arg Cys Gly				
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Asp Lys Leu Pro Glu Phe Tyr Thr Gly Arg Thr Ala Leu Thr Ala				
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Phe Pro Tyr Tyr Asp Ala Ile Ala Lys Ile Ala Thr Phe Cys Pro				
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Ser Gln Tyr Thr Ser Met Leu Ser Phe Gln Val Val Gly Ser Gln				
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Leu Gln Pro Asn Phe Thr Asp Lys Tyr Val Lys Val Ile Ser Lys				
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Asn Ile Asn Ser Ala Asp Cys Ser Cys Asn Arg Phe Asn Asp Thr				
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Asn Thr Ala Lys Phe Ile Ile Trp Met Pro Arg Ser Ala Ala Pro				
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Glu Gly Pro Asp Tyr Tyr Trp Leu Pro Asn Ala Val Asn Ala Thr				
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Asn Leu Gln Thr Asn Val Ile Asn Ile Leu Tyr Glu Lys Leu Cys				
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Gln Phe Val Gln Met Ile Leu Asn Ser Leu Ile Asn Lys Ser Lys Ser  
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Asp Pro Phe Leu Ser Ser Leu Val Pro Tyr Pro Val Thr Thr Thr Val Gly  
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ctg ttt tat cct gtaagtacca aatatgaatg gcaatattat tacattttaa 308  
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Ser Leu Ile Asn Lys Ser Lys Ser Ser Met Phe Gln Val Arg Thr Leu  
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Leu Leu Leu Trp Thr Arg Gly Thr Gln Gly Ser Glu Leu Asp Pro Lys  
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ggg cag cac gtc tgt gtg gcc agc agc ccc tct gct gag ctg cag tgc Gly Gln His Val Cys Val Ala Ser Ser Pro Ser Ala Glu Leu Gln Cys 30 35 40	149
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ctc tgt cga tgc aag cct gga ttc ttt ggg gcc cac tgc agc tcc cgc Leu Cys Arg Cys Lys Pro Gly Phe Phe Gly Ala His Cys Ser Ser Arg 75 80 85	293
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gcc gac cgc tgg gga gcc cgc tgc gag ttc ccg tgc gcc tgc ggc ccc Ala Asp Arg Trp Gly Ala Arg Cys Glu Phe Pro Cys Ala Cys Gly Pro 125 130 135	437
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gcg cgc tgc gag cag gcc acg ggc gcc tgc gtg tgc aag ccg ggc tgg Ala Arg Cys Glu Gln Ala Thr Gly Ala Cys Val Cys Lys Pro Gly Trp 170 175 180 185	581
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gag cag gac tcc ggc cgc tgc gcc tgc cgg ccg ggc tgg tgg ggt ccc Glu Gln Asp Ser Gly Arg Cys Ala Cys Arg Pro Gly Trp Trp Gly Pro 205 210 215	677
gaa tgc cag cag cag tgc gag tgt gtg cgg ggc cgc tgc agc gcc gcc Glu Cys Gln Gln Gln Cys Glu Cys Val Arg Gly Arg Cys Ser Ala Ala 220 225 230	725
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Gln Glu Ser Ser Gly Pro Val Thr Thr Ile Tyr Met Leu Ala Gly Lys	
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35 40 45

Asp Gln Glu Cys Thr Ile Pro Ile Cys Glu Gly Pro Asp Ala Cys Gln  
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Lys Asp Glu Val Cys Val Lys Pro Gly Leu Cys Arg Cys Lys Pro Gly  
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Pro Asp Cys Arg Glu Ser Cys Pro Cys His Pro His Gly Gln Cys Glu  
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Pro Ala Thr Gly Ala Cys Gln Cys Gln Ala Asp Arg Trp Gly Ala Arg  
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Arg Cys Asn Cys His Gly Ser Pro Cys Glu Gln Asp Ser Gly Arg Cys  
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Ala Cys Arg Pro Gly Trp Trp Gly Pro Glu Cys Gln Gln Gln Cys Glu  
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Cys Val Arg Gly Arg Cys Ser Ala Ala Ser Gly Glu Cys Thr Cys Pro  
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Pro Gly Phe Arg Gly Ala Arg Cys Glu Leu Pro Cys Pro Ala Gly Ser  
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His Gly Val Gln Cys Ala His Ser Cys Gly Arg Cys Lys His Asn Glu  
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Pro Cys Ser Pro Asp Thr Gly Ser Cys Glu Ser Cys Glu Pro Gly Trp  
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Asn Gly Thr Gln Cys Gln Gln Pro Cys Leu Pro Gly Thr Phe Gly Glu  
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Ser Cys Glu Gln Gln Cys Pro His Cys Arg His Gly Glu Ala Cys Glu  
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Pro Asp Thr Gly His Cys Gln Arg Cys Asp Pro Gly Trp Leu Gly Pro  
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Arg Cys Glu Asp Pro Cys Pro Thr Gly Thr Phe Gly Glu Asp Cys Gly  
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Ser Thr Cys Pro Thr Cys Val Gln Gly Ser Cys Asp Thr Val Thr Gly  
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Asp Cys Val Cys Ser Ala Gly Tyr Trp Gly Pro Ser Cys Asn Ala Ser  
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Cys Pro Ala Gly Phe His Gly Asn Asn Cys Ser Val Pro Cys Glu Cys  
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Pro Glu Gly Leu Cys His Pro Val Ser Gly Ser Cys Gln Pro Gly Ser  
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Gly Ser Arg Asp Thr Ala Leu Ile Ala Gly Ser Leu Val Pro Leu Leu  
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Gly Lys Lys Pro Lys Gly Leu His Leu Leu Ser Ser Pro Trp Trp Phe  
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Leu Ile Val Gln Trp Thr Gln Leu Arg Gln Val Ser Asp Leu Leu Lys  
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gaa ctg aaa gga aag ata gac acc ctc acc cag aag ctg aat gag aaa 392  
Glu Leu Lys Gly Lys Ile Asp Thr Leu Thr Gln Lys Leu Asn Glu Lys  
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360

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Trp Trp Phe Pro Ala Ala Met Thr Leu Val Ile Leu Cys Leu Val Leu  
35 40 45

Ser Val Thr Leu Ile Val Gln Trp Thr Gln Leu Arg Gln Val Ser Asp  
50 55 60

Leu Leu Lys Gln Tyr Gln Ala Asn Leu Thr Gln Gln Asp Arg Ile Leu  
65 70 75 80

Glu Gly Gln Met Leu Ala Gln Gln Lys Ala Glu Asn Ala Ser Gln Glu  
85 90 95

Ser Lys Lys Glu Leu Lys Gly Lys Ile Asp Thr Leu Thr Gln Lys Leu  
100 105 110

Asn Glu Lys Ser Lys Glu Gln Glu Glu Leu Leu Gln Lys Asn Gln Asn  
115 120 125

Leu Gln Glu Ala Leu Gln Arg Ala Ala Asn Ser Ser Glu Glu Ser Gln  
130 135 140

Arg Glu Leu Lys Gly Lys Ile Asp Thr Ile Thr Arg Lys Leu Asp Glu  
145 150 155 160

Lys Ser Lys Glu Gln Glu Glu Leu Leu Gln Met Ile Gln Asn Leu Gln  
165 170 175

Glu Ala Leu Gln Arg Ala Ala Asn Ser Ser Glu Glu Ser Gln Arg Glu  
180 185 190

Leu Lys Gly Lys Ile Asp Thr Leu Thr Leu Lys Leu Asn Glu Lys Ser  
195 200 205

Lys Glu Gln Glu Glu Leu Leu Gln Lys Asn Gln Asn Leu Gln Glu Ala  
210 215 220

Leu Gln Arg Ala Ala Asn Phe Ser Gly Pro Cys Pro Gln Asp Trp Leu  
225 230 235 240

Trp His Lys Glu Asn Cys Tyr Leu Phe His Gly Pro Phe Ser Trp Glu  
245 250 255

Lys Asn Arg Gln Thr Cys Gln Ser Leu Gly Gly Gln Leu Leu Gln Ile  
260 265 270

Asn Gly Ala Asp Asp Leu Thr Phe Ile Leu Gln Ala Ile Ser His Thr  
275 280 285

Thr Ser Pro Phe Trp Ile Gly Leu His Arg Lys Lys Pro Gly Gln Pro  
290 295 300

Trp Leu Trp Glu Asn Gly Thr Pro Leu Asn Phe Gln Phe Phe Lys Thr  
305 310 315 320

Arg Gly Val Ser Leu Gln Leu Tyr Ser Ser Gly Asn Cys Ala Tyr Leu  
325 330 335

Gln Asp Gly Ala Val Phe Ala Glu Asn Cys Ile Leu Ile Ala Phe Ser  
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Ala Ala Arg Ala His Tyr Asn Ile Val Thr Phe Ala Ala Ala Ile Tyr  
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Lys Lys Ser Gln His Met Ala Ala Ala Val Asn Ile Arg Asn Cys Cys  
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